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THE NEW YORKER

MAY 18, 2020

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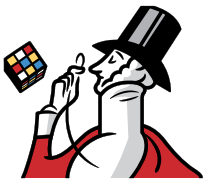

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MAY 18, 2020

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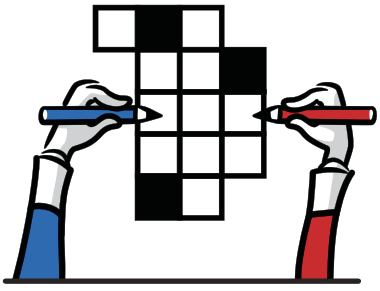

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THE NEW YORKER

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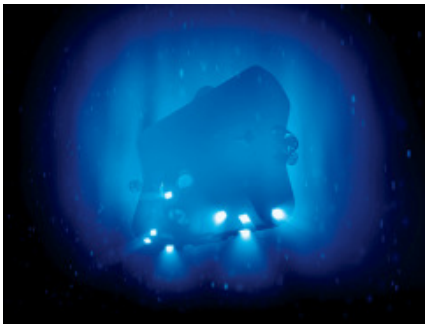

A REPORTER AT LARGE
Animated submarine schematics, maps, and crew photos dive deeper into Ben Taub's story from this issue.

MEDICAL DISPATCH
Eren Orbey on the medical students who graduated from school early to join the coronavirus fight.

Download the New Yorker Today app for the latest news, commentary, criticism, and humor, plus this week's magazine and all issues back to 2008.

LEFT: CARL BURTON; RIGHT: TAYLOR KAY JOHNSON FOR THE NEW YORKER

THE MAIL

COFFEEHOUSE CULTURES

Adam Gopnik fluidly leads us through the historical and economic underpinnings of coffee drinking to elucidate the global web of the bean (Books, April 27th). He observes that the growth of coffee culture in the United States can be measured by the large numbers of epicurean cafés, coffee connoisseurs, and imported espresso beans that have entered society since 1989. This notion of an American coffee culture implies that the people partaking in it have become "cultured." Yet there are more quotidian coffee cultures in American history worth mentioning. I think back to the domestic routines developed in mid-century America: of the percolator perched on our kitchen counter, of Mrs. Olson saving marriages with Mountain Grown Folger's, of the ubiquitous packets of Sanka, of the rotgut coffee at truck stops, and of taking your coffee "white" (with cream). All this, from what seems like a lifetime ago, was just as much a culture of coffee, and just as integral to the changing history of the brew.

Maureen Barbara Jackson
Seattle, Wash.

As I was reading Gopnik's piece on the link between coffee and capitalism, I was put in mind of the bean's arrival in England—an event with impressive political and social repercussions. An early English coffee culture arose by the mid-seventeenth century, prompting writers to extoll (and exaggerate) the drink's alleged health benefits. (One advertisement, from 1652, claimed that coffee could cure gout, aid digestion, and prevent miscarriages.) Coffee, more than claret or ale, was well suited to democratic discourse. The new drink was especially favored by Parliamentarians after the English Civil War: coffeehouses eventually became known as "penny universities"—places where men of different classes, opinions, and trades could sit around a table and strike up a conversation. (It was no wonder that King Charles II tried to outlaw coffeehouses in 1675, or that satirists, who may have had Royalist leanings, decried coffee drinkers as impotent and overly talkative.) Coffee, which remains a vital social lubricant today, undoubtedly propelled late-night negotiations in early modern England and empowered radical thinkers to imagine a world with greater political liberty.

Stephen B. Dobranski
Distinguished University Professor
Department of English
Georgia State University
Atlanta, Ga.

HOW TO FIGHT COVID-19

I read with appreciation Amy Davidson Sorkin's piece about global efforts to contain the coronavirus (Comment, April 27th). She points to the talk about how countries led by women seem to be faring relatively well in the fight against COVID-19, and rightly notes that these nations are "disproportionately small, wealthy, Scandinavian, and, not incidentally, providers of universal health care." It occurred to me that there may be other contributing social factors as well. These lauded countries with women leaders—including, but not limited to, New Zealand, Taiwan, Germany, Denmark, Finland, Norway, and Iceland—also tend to accept the legitimacy of science, and to take a rational approach to balancing public health with personal freedoms. It is therefore not surprising that their citizens are more likely to express an open mind at the polls, about both party leaders and party policies.

Scott K. Ralph
Oakville, Ont.

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PROMOTION

THE REAL ACTION IS OFF THE FIELD.

GQ SPORTS

WATCH AT youtube.com/gqsports

In an effort to slow the spread of the coronavirus, New York City museums, galleries, theatres, music venues, and cinemas have closed. Here's a selection of culture to be found online and streaming.

GOINGS ON ABOUT TOWN

Charli XCX has been making futuristic electro-pop since her 2013 début, "True Romance," but with her new album, "How I'm Feeling Now," produced in quarantine at her home in L.A. (where she is pictured), the English singer-songwriter creates music for the present. The singles "Forever" and "Claws" crackle, smolder, and otherwise short-circuit, as though Charli's electronic devices cannot withstand the intensity of her desire for human connection. "I'll love you forever," she sings, "even when we're not together."

PHOTOGRAPH BY HUCK KWONG

ART

Kerstin Brätsch

How should a painting be? Given that this daring German artist, who calls New York home, received the inaugural Helen Frankenthaler Award, in 2019, one simple answer is: abstract and colorful, like Brätsch's extravagantly beautiful, if deliriously weird, new series, "Fossil Psychics for Christa." But there is nothing simple about Brätsch's convention-defying approach. Where Frankenthaler's stained surfaces were whisper-thin, Brätsch pushes pigment to behave with the physical oomph of geologic formations—and she doesn't do it alone. To deflate the modernist myths of the solitary genius and of the superiority of art over craft, Brätsch collaborates with artisans on her projects, in this case with Valter Cipriani, a Roman specialist in the seventeenth-century Italian technique of *stucco marmo*. MOMA commissioned the series for its new Terrace Café, an ideal context for an artist who is adamant that art should never be separate from the ordinary pleasures of life. (The museum is temporarily closed, but its Web site has several features on Brätsch, who is also included in a virtual viewing room of the gallery Gavin Brown's Enterprise.)—*Andrea K. Scott (moma.org and gavinbrown.biz)*

"Radical Women"

The first season of the Getty's "Recording Artists" podcast is hosted by the renowned curator Helen Molesworth, whose enthusiasm for her subjects—six formidable twentieth-century artists—is as illuminating as the audio interviews at the heart of the series. In the first episode, Molesworth describes herself as a "fangirl" of the figurative painter Alice Neel, but she's erudite and critical, too. Lee Krasner, Betye Saar, Helen Frankenthaler, Yoko Ono, and Eva Hesse are each the focus of a subsequent episode. Molesworth deftly sets up the archival recordings—conversations conducted by the feminist art historians Cindy Nemser and Barbara Rose mostly in the nineteen-sixties and seventies—with lively biographical accounts and commentary from an outstanding group of guests. The artists Catherine Lord and Sanford Biggers have refreshing takes on Ono; the painters Amy Sillman and Lari Pittman are great on Krasner. And it's a treat, of course, to hear the old recordings. In a memorable moment, Frankenthaler, speaking of a studio visit with the critic Clement Greenberg circa 1951, states, as though it's a matter of fact, that "to his astonishment, I was knocking out paintings that were pretty terrific." The self-reflective insights and smile-provoking swagger in the entire series are pretty terrific, too.—*Johanna Fateman (getty.edu)*

Rhizome

In 1996, the American artist Mark Tribe recognized that the Internet is more than a virtual showroom for conventional work—it's an artistic medium in its own right. He started a Listserv for like-minded thinkers and named it Rhizome, a botanical term (then in vogue with semiologists) that describes an unpredictable, always expanding network. Over the years, Rhizome.org has grown from an upstart into a stalwart nonprofit based in New York and affiliated with the New Museum. It commissions and preserves digital art, and exhibits it, too, notably in the continuing series "First Look: New Art Online." Curious how pixels stack up to paint? Scroll through the eight-person show "Brushes," which ranges in tone from airy and calligraphic (Laura Brothers's "Deux Blue") to memelike and manic (Jacob Ciocci's animated GIFs). Binge-watchers can catch a three-part musical episode of Shana Moulton's surreal pseudo soap opera, "Whispering Pines," whose housebound heroine indulges in self-care routines that—spoiler alert—turn her into a goddess.—*A.K.S. (rhizome.org)*

"Total Disbelief"

When this fascinating fifteen-person show opened, pre-pandemic, the derelict car with grayed-out windows parked on the street in front of the SculptureCenter might have been mistaken for a prop from a sci-fi film shoot. When the city was ordered to stay home and spin its wheels, the ghostly untitled piece by Devin Kenny and Andrea Solstad seemed eerily prescient. The eclectic exhibition (whose illustrated catalogue is online while the nonprofit remains temporarily closed) was thoughtfully curated by Kyle Dancewicz, but the title he chose for the show is misleading—its mood, far from one of absolute incredulity, is fraught with false starts and second-guessing. One standout is the New Orleans-born, New York-based Emilie Louise Gossiaux, who became blind as an undergraduate art student and went on to earn an M.F.A. at Yale. The centerpiece of her tenderly

ART ONLINE

Mail art, which requires neither exhibition space nor Zoom conferencing, is poised for a comeback. The genre emerged, in the nineteen-sixties, as a challenge to conventional art objects and hidebound institutions. It's no surprise, then, that much of the material in the Smithsonian Archives of American Art's exhibition **"Pushing the Envelope,"** winningly curated by Miriam Kienle (and now on view at aaa.si.edu), comes from the papers of Lucy Lippard, an influential theorist of the movement. One typescript flyer, from 1971, was sent to Lippard by the revered late Conceptualist John Baldessari, whose witty way with text lit a path for so many other artists. Titled "The Best Way to Do Art," it concludes with the wry observation that it's difficult to fit a Cézanne into a mailbox. A more visually dynamic missive by the collective Les Petites Bon-Bons, sent circa 1970, is adorned with fruit-shaped stickers and asks readers to "please imagine a Gay universe." From the Neo-Dadaist collage works of Ray Johnson to the Uruguayan artist Clemente Padín's agitprop, mail art is shown to be a powerful form for pranks, political dissent, and forging networks outside the gallery system. It still can be—as long as the Postal Service hangs on.—*Johanna Fateman*

LUCY R. LIPPARD PAPERS / ARCHIVES OF AMERICAN ART, SMITHSONIAN INSTITUTION

STREAMING THEATRE

Among the places I wish I could go right now are the **Public Theatre,** downtown theatre's usually buzzing hub, and its Central Park outpost, the Delacorte. Fortunately, the Public has been putting what it can online (at publictheater.org). Shakespeare in the Park is cancelled, but last summer's spiky, Georgia-set "Much Ado About Nothing," starring Danielle Brooks and Grantham Coleman (and featuring a timely "Stacey Abrams 2020" sign), is streaming for free, via WNET. Richard Nelson's plays chronicling two fictional families in Rhinebeck, New York, make for low-key binge-watching. (Nelson recently wrote a pandemic edition of his Apple-family plays, which was performed on Zoom.) And Joe's Pub, the Public's in-house cabaret, is sharing live-streamed shows and selections from its archives. This week: The composer Samora Pinderhughes, the jazz band the Hot Sardines, and Stephanie Chou's "Comfort Girl," a musical study of the Chinese women forced into sexual slavery by the Japanese Army during the Second World War.—*Michael Schulman*

witty installation is a display of stoneware arms, legs, chests, and torsos—modelled on those of the artist and her family—marked with tattoos, which she re-created from memory.—*A.K.S. (sculpture-center.org)*

THE THEATRE

Bleeding Love

You may be forgiven for thinking that the plot of "Bleeding Love" is a little on the nose: the book writer Jason Schafer transposed elements of the Oscar Wilde story "The Nightingale and the Rose" to a future wrecked by climate change, with folks afraid to leave their houses. Yet the romance-minded musical premièred in Denmark in 2015—the post-apocalypse never goes out of style. "Bleeding Love" is now getting wide exposure thanks to an audio production on the Broadway Podcast Network, delivered in three installments of about thirty minutes each. The eclectic score (music by Arthur Lafrentz Bacon, lyrics by Harris Doran), ranging from Broadway to classical and rock, is agreeable enough, but the main draw is the terrific cast. Sarah Stiles ("Tootsie"), with her customary verve, portrays a lovelorn cellist, and Marc Kudisch, Rebecca Naomi Jones, Annie Golden, Taylor Trensch, and Tony Vincent feel so alive that you almost don't miss seeing them.—*Elisabeth Vincentelli*

Soundstage

In 2018, Playwrights Horizons started working on a podcast series titled "Soundstage." The timing turned out to be critical, as we are now exploring new ways to experience theatre—and rediscovering old ones, as these shows feel like radio productions. The first episodes are all over the stylistic map. "PRIME: A Practical Breviary" is a meditative ten-song cycle by the rising composer Heather Christian ("Animal Wisdom"), who conceived it for a collective 6 A.M. Mass. It's saying something that "PRIME" is the most traditional of the initial three podcasts. "Gather," written and directed by Robert O'Hara ("Bootycandy," "Barbecue"), sets up a thriller atmosphere, then springs the kind of pointed, surreal twist at which he excels. Jordan Harrison's "Play for Any Two People" is exactly that: a show for two listeners to perform together (they speak lines and act out movements by following cues on a pair of audio tracks). New "Soundstage" episodes, which come out every other Thursday, will include works by Lucas Hnath, Kirsten Childs, and Jeremy O. Harris.—*E.V. (soundstagepodcast.org)*

DANCE

New York City Ballet

The original "Pulcinella" was premièred by the Ballets Russes in Paris, in 1920, with designs by Picasso and music by Stravinsky. The composer later turned his melodious, refined score into a series of orchestral suites; Justin Peck used one of them for his "Pulcinella Variations," created for City Ballet in 2017. (It will be broadcast on May 15.) Peck jettisoned the commedia-dell'arte narrative, but, by dressing his dancers in the whimsical costumes of Tsumori Chisato, he kept some of its original witty flavor. Colorful tutus sport giant eyes and daisy petals; tights are decorated with checkered or zigzag patterns. The ballet is crisp and bright, playful but rigorously structured. It's one of Peck's finest. On May 19, the company will show Balanchine's regal and elegiac "Diamonds," set to three movements of Tchaikovsky's Third Symphony. Sara Mearns and Russell Janzen lead the cast.—*Marina Harss (nycballet.com)*

Alvin Ailey

Robert Battle, the director of Alvin Ailey American Dance Theatre since 2011, is a choreographer of note. His main interest seems to lie in building architectural forms—shapes that shift, expand, and contract with near-mathematical precision. His 2004 piece "Mass," which the company will broadcast on its Ailey All Access Web page on May 14, was inspired by a performance of Verdi's Requiem. What struck Battle was less the music than the way that the rows of chorus members entered and exited, their robes swishing around them. In this dance, he plays with that idea, dissolving and recombining the ensemble—also dressed in robes—creating parallel and intersecting pathways. The percussion-heavy score is by John Mackey.—*M.H. (alvinailey.org/ailey-all-access)*

JoyceStream: Stephen Petronio

The Joyce Theatre's streaming series continues on YouTube, May 15-21, with Stephen Petronio's "American Landscapes." A meditation on the state of the nation, the 2019 work has as its backdrop a not so subtle slide show of images by Robert Longo: flags, soldiers, Rosie the Riveter, kneeling football players, marchers, explosions. Much as the score, by Jim Jarmusch and Jozef van Wissem, cuts gentle lute with electric grunge, the dance spikes melancholy with anger, the torqued elegance of Petronio's signature style expressing both strength and confusion. On May 19, there's an artist talkback.—*Brian Seibert (joyce.org/engage/joycestream)*

MUSIC

Aril Brikha: "Prisma"

TECHNO The Swedish techno producer Aril Brikha has long been inspired by the soulful

ILLUSTRATION BY MAX DALTON

approach taken to the genre in its home city of Detroit—his tracks seem to pulsate with feeling as much as with star-chasing synths or swinging hi-hats. Brikha has been especially prolific of late: his new album, "Prisma," comes only three months after an ambient disk, "Dance of a Trillion Stars." "Prisma" is aimed for the dance floor, even though its bouncy disco rhythms and sheeny production have arrived at a time when clubs are off limits—but its contemplative core rather fits our straitened circumstances.—*Michaelangelo Matos*

Drake: "Dark Lane Demo Tapes"

HIP-HOP The Canadian rapper Drake has never seemed too concerned about crowding his discography. His catalogue has become a reservoir for studio overflow—full of mixtapes, EPs, playlists, and even a twenty-five-song album. His latest addition, "Dark Lane Demo Tapes," is mostly wispy sketches, powered by lo-fi beats, that aim for depth without quite achieving it. Even when the sounds are melancholy, what Drake pulls off is catchiness: the *Billboard* No. 1 "Toosie Slide" is addictive TikTok fodder, and "Pain 1993" glows as an up-tempo exchange with Playboi Carti. But, taken together, the project feels like a stepping stone to another studio album—his next is due out this summer.—*Julyssa Lopez*

Joan as Police Woman: "Cover Two"

ROCK An international quarantine, it turns out, is prime time for cover songs. Across the Internet, young singers have busied themselves interpreting old material; even the "Saturday Night Live" musical guests have turned to classic rock as a balm. It raises the question: Why have covers, once central to rock's lifeblood, so thoroughly vanished from albums? Joan Wasser, who performs as Joan as Police Woman, is one songwriter who has long devoted attention to voicing the lyrics and melodies of others. Though needlessly walled off from her own work—first on "Cover," from 2009, and now on its belated sequel, "Cover Two"—her covers are reliably cherry-picked and fussed over. Like many such projects, this second volume pops when the singer carves up a song to see what lies inside. From universally male sources as disparate as Gil Scott-Heron, Prince, and the Strokes, Wasser unearths torrid ballads. The songs belong to others; the trails of smoke in their wake are her own.—*Jay Ruttenberg*

Kurt Rosenwinkel Trio: "Angels Around"

JAZZ Improvisation may be the wellspring of jazz, but utilizing a memorable melody as a jumping-off point never hurt anybody. On the album "Angels Around," the guitarist Kurt Rosenwinkel, himself an adept composer, mainly opts to mine the work of illustrious others; in choosing such polished gems as Thelonious Monk's "Ugly Beauty," Charles Mingus's "Self-Portrait in Three Colors," and Bill Evans's "Time Remembered," he sets a daunting standard for any future variations. To his credit, Rosenwinkel remains a high-calibre melodist, and his fleet yet considered solos attest to his commitment to keeping striking phrases—each wrapped in his attractive, effects-laden tone—in view. His trio mates, the Italian bassist Dario Deidda and the celebrated drummer Gregory Hutchinson, likewise glean inspiration from the durable offerings that their forerunners have left them.—*Steve Futterman*

Opera Philadelphia: Digital Festival O

OPERA For the past several years, Opera Philadelphia has raised its national profile with a festival of new music each September. This month, the company applies its venturesome spirit to a streaming series, available on its Web site and YouTube channel, to the benefit of operagoers curious about what it's been up to. Philip Venables's "Denis & Katya," a true-crime opera that rivets without sensationalism, set a high bar when it kicked things off, on May 1. There are still three more productions scheduled for release: Rossini's "Il Barbiere di Siviglia," the series' one traditional entry; Lembit Beecher's "Sky on Swings," with Marietta Simpson and Frederica von Stade as Alzheimer's patients; and Missy Mazzoli's devastating "Breaking the Waves," with Kiera Duffy, who gave a fearless performance in the piece at New York's Prototype Festival in 2017.—*Oussama Zahr (May 15, May 22, and May 29 at 8.)*

Hayley Williams: "Petals for Armor"

INDIE When band musicians make solo work, their efforts are often fascinated with autonomy. But Hayley Williams, who has led the pop-punk mainstay Paramore for half her life, embraces collaboration on her début solo album, "Petals for Armor," and uses it to deepen her quiet explorations of self. "Simmer," a seething, synth-filled study of rage, features her bandmate (and the record's producer) Taylor York, and the indie supergroup boygenius pipes in to reinforce her vocals on "Roses/Lotus/Violet/Iris." The album, which has been released in three parts, swings from peppy yet pain-filled moments, as on "Dead Horse," to disarming piano balladry. It's a compendium of varied, strange, jagged pieces, but eventually a full picture emerges—the clearest of Williams yet.—*J.L.*

X: "Alphabetland"

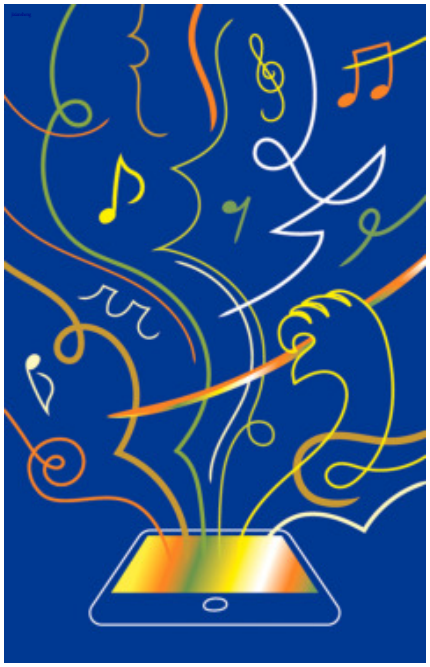
PUNK The founding members of the rock quartet X quit recording together thirty-five years ago, only five years and four releases after their début album, "Los Angeles," signalled that punk had taken up residence in proximity to laid-back Laurel Canyon. The biggest surprise about their reunion record, "Alphabetland," is not that its roar has a familiar potency but that the songwriter-vocalists Exene Cervenka and John Doe seem so attuned to the current apocalyptic moment. Atop the boom and crackle unleashed by the guitarist Billy Zoom and the drummer D. J. Bonebrake, one topical chorus asks, "Who gets passed to the head line? Who gets water, who gets wine?" Another, already exhausted by the year at hand, begs for mercy: "Please don't make us cry." The ruckus is tailor-made for blowing off steam in quarantine.—*K. Leander Williams*

MOVIES

Cane River

This 1982 drama, long believed lost and recently rediscovered, is the only feature by Horace B. Jenkins, an African-American filmmaker who died soon after its completion. It's centered on the romance of a young black man, Peter Metoyer (Richard Romain), a recent college graduate and a poet who returns to his family's farm in rural Louisiana, and a local

CLASSICAL LIVE STREAMING



The current pandemic has posed an industry-wide crisis for artists and presenters, but they have reacted quickly and imaginatively, putting out free digital content as a way to share creative work. Now the **92nd Street Y** is embracing a two-pronged approach to show how companies might maintain visibility while bolstering a badly depleted bottom line. This month, it streams concerts on its Web site (92y.org) every Tuesday and Thursday, alternating free archival content with live events that carry an admission charge of ten dollars. Next up are a recording, from 2018, of the late magisterial pianist Peter Serkin's final recital at the Y, on May 14, and a live performance by the violinist Jesse Mills and the pianist Rieko Aizawa, presenting works by Schubert, Poulenc, and John Harbison, on May 19.—*Steve Smith*

ILLUSTRATION BY JENICE KIM

tour guide named Maria Mathis (Tommye Myrick), a twenty-two-year-old black woman who, desperate to escape small-town life, is about to leave home for college. Maria comes from a poor family descended from enslaved Africans; Peter comes from a landowning Creole family (including mixed-race ancestors who owned slaves), and their relationship is strained by the groups' long-standing social differences. Jenkins's spare, frank lyricism foregrounds the couple's tense discussions about the traumas of history, the weight of cultural memory, and the pressure of racial injustice; he lends the intimate tale a vast and vital resonance.—*Richard Brody (Streaming on the Criterion Channel.)*

The Curious Case of Benjamin Button

The director David Fincher and the writers Eric Roth and Robin Swicord rework F. Scott Fitzgerald's gentle fantasy, about a man who is born old and ages in reverse, into a sumptuous and stirring romantic drama. With the framework of a long-hidden diary and a mysterious tale of concealed paternity, they turn Benjamin's recollections into flashbacks that begin with his birth, on November 11, 1918. Pitt's face and head, made up to appear aged, are digitally grafted onto a child's body; the result is an exquisite hyperrealism that floats through history with the fragile bliss of dreams. In his youth, Benjamin meets a girl named Daisy, who, as an adult (played by Cate Blanchett), is the love of his life; she grows older as he becomes ever younger. His sense of being out of synch with his times yields an intensified sense of mortality; his keen, quiet serenity is perched on the edge of tears. The movie's framing story, set in a New Orleans hospital during Hurricane Katrina, is a grave reminder of tragic impermanence.—*R.B. (Streaming on Netflix and other services.)*

Fourteen

The diverging paths and seething conflicts of two lifelong friends, now young Brooklyn professionals, are explored deeply and poignantly in this deceptively calm melodrama, written and directed by Dan Sallitt. It stars Tallie Medel as Mara, an aspiring writer and teacher; she's working toward a master's degree while negotiating a fragile relationship with a software engineer (C. Mason Wells) who's often on the road. Yet Mara's tightest bond is with Jo (Norma Kuhling), a social worker whose temperamental ways—and substance-abuse issues—impede Jo's career and make friendship an increasingly rough road. Mara and Jo see each other through a series of romantic troubles, with the burden of care landing on the more settled Mara's shoulders; the resulting frustrations play out in sharply written, briskly staged, urgently performed sequences that leap daringly ahead in time through the friends' major life changes and convey the sense of days being seized from looming chaos. Medel, an independent-film mainstay, and Kuhling, a newcomer, hold the screen fiercely, together and apart.—*R.B. (Streaming on Grasshopper Film and other sites.)*

Losing Ground

Kathleen Collins's only feature, from 1982, is the story of a middle-class black couple in New York—Sarah (Seret Scott), a young philosophy professor, and Victor (Bill Gunn), an older artist—whose careers shake the fault lines in their romance. Sarah plans to spend the summer writing an essay on ecstatic experience, but Victor, an abstractionist in search of new inspirations, finds them a country house in an upstate town where he uses the locals as models—especially one young woman, Celia (Maritza Rivera). Sarah struggles with her research while Victor's art flourishes, and Celia soon becomes an uneasy presence in their home. Collins dramatizes crises of gender and race—as well as of intellectual pursuit and artistic ambition—with a decisive and nuanced touch, and her attentiveness to light and color is itself painterly; the movie conveys a thrillingly tactile sense of high-relief surfaces. When Sarah accepts a role in a student film along with a suave and graying actor (Duane Jones) who offers consolation, the fusion of cinema and life, of symbol and substance, rises to a shriek of redemption.—*R.B. (Streaming on the Criterion Channel.)*

Pain and Glory

The latest film from Pedro Almodóvar stars Antonio Banderas as Salvador Mallo, a movie director in late middle age. (Many of the details are autobiographical.) He lives alone in Madrid, attended by aches and pains of every description; it is only in meeting figures from his past—an actor with whom he once worked; a former lover—that he rediscovers his creative strength. Now and then, we are spirited back into that past, and to the happiness that enveloped Salvador, as a boy (played by Asier Flores), in the company of his mother, Jacinta (Penélope Cruz). No one is more dexterous than Almodóvar at slipping to and fro across time, and never before has he, or the rueful Banderas, conjured so convincing an air of autumnal regret. A lovely performance from Julieta Serrano, as the elderly Jacinta, is wholly in keeping with the mood. In Spanish.—*Anthony Lane (Reviewed in our issue of 10/14/19.) (Streaming on Amazon, Vudu, and other services.)*

For more reviews, visit
newyorker.com/goings-on-about-town

WHAT TO STREAM

PHOTO 12 / ALAMY

Film at Lincoln Center's Virtual Cinema series will offer, starting May 15, a welcome restoration of a modern classic, Nanni Moretti's **"Caro Diario"** ("Dear Diary"), from 1993. This light-toned but thematically substantial autofiction is organized like a sequence of diary entries brought to life with Moretti's wryly confessional voice-overs. The first section, "On My Vespa," shows Moretti as a Roman flâneur in fast motion, zipping through the city and delighting in familiar sights; it blends sardonic observations with musical fantasies and an awkward chance encounter with Jennifer Beals, before concluding with a grand yet graceful memorial tribute to the director and writer Pier Paolo Pasolini. The second part, "Islands," a tale of Moretti's quest for solitude in a vain effort to write a script, becomes a self-satirizing homage to Roberto Rossellini's first film with Ingrid Bergman, "Stromboli." The final section, "Doctors," involving Moretti's own experience of chemotherapy (which he films) and his subsequent misadventures with the Italian medical system, crowns his comedic vision of a way of life, rooted in humane warmth, at risk of being lost.—*Richard Brody*

TABLES FOR TWO

A Pivot to Groceries

Among my most treasured possessions right now is an imposingly large plastic jug containing five litres of olive oil from Spain. I got it at Hart's, a restaurant in Bed-Stuy. On a recent Sunday, in a misty rain, I stood in an exceptionally calm line of people (all masked, some gloved, all spaced at least six feet apart) waiting to approach a table just inside the doorway. Behind it, Hart's three proprietors, Nialls Fallon, Leah Campbell, and Nick Perkins—who also own and operate the Fly, a few blocks away, and Cervo's, on the Lower East Side—were filling bags and boxes with olive oil; produce, eggs, and meat (including freshly killed, dry-brined chickens, ready to be roasted) from local farms; tinned seafood; and bottles of wine and liquor.

Since early March, the dining rooms at Hart's, the Fly, and Cervo's have been closed. They have never offered takeout, and the team decided that they weren't going to start now, both because they don't feel that their food would travel well and because they didn't want to put their staff at risk. But what started as a way to off-load excess inventory became a full pivot: all three establishments—and countless others across the city—are now effectively functioning as contactless grocery stores, open one day a week to fulfill orders placed online.

If there's one thing I'd be happy to retain when shelter-in-place restrictions are lifted, it's the opportunity to buy groceries from neighborhood restaurants. Professional chefs excel at knowing not only how to cook but also, equally important, what to cook, and where to get the best ingredients. The day before, I'd stood in another line, outside Archestratus, an exceptional bookstore and café in Greenpoint, for what its owner and chef, Paige Lipari, has dubbed her One-Stop Contactless Shop of the Highest Order. From behind a table just inside the doorway, Lipari passed me a box laden with a half gallon of grass-fed milk, a two-pound sack of all-purpose flour, and a hulking ham hock from Smoking Goose, a butcher shop in Indiana, all of which I'd ordered on her Web site several days prior. She hoisted, too, a plastic bag stuffed with bouquets of escarole, rainbow chard, and fava greens from Bodhitree Farm, in New Jersey.

For Lipari, transition comes naturally. Not long after Archestratus opened, in 2015, she began to regularly convert the store, which served prepared foods and pastries during the day, into an after-hours supper club, selling tickets to meals featuring her family's Sicilian recipes and dinners cooked by guest chefs, often on cookbook tours. Before the pandemic, she was already stocking a small selection of dry goods, including Rancho Gordo beans and Italian pistachio spread, and with her expanded offerings she is fulfilling a legacy of sorts: for decades, her grandparents ran Lipari & Sons Latticini, a shop in Bushwick that sold groceries in addition to fresh mozzarella.

For safety as much as monetary reasons, Lipari and Fallon, Campbell, and Perkins laid off all their employees in March. If business continues apace—on a recent weekend, Lipari filled two hundred and thirty orders—they'll be able to pay their bills, and to rehire staff and welcome back diners when it feels wise to do so. But they all seem very clear-eyed about how uncertain the future remains, and open to the idea of a new normal.

"To be able to weather other storms that come our way," Fallon told me by phone, restaurants might need to be "a little more diversified, and not just dine-in." He and his partners are finding gratification in sharing recipes, cooking advice, and their favorite cost-effective products with customers. "We've always been in the business of providing for our community—providing good food, providing good wine, helping people have a sense of place," Perkins said. "In a lot of ways right now, we're still doing that. We just have a different business model." Lipari told me, "A lot of people have said to me, 'This is better than what I can get when I normally shop, this flour is the best flour I've ever made bread with.' So why not keep going with that?"

—Hannah Goldfield

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THE NEW YORKER

THE TALK OF THE TOWN

COMMENT
BLAMING BEIJING

When an Ebola epidemic erupted in West Africa, in 2014, the United States and China, the world's two largest economic powers, responded in starkly different fashions. The Obama Administration dispatched the 101st Airborne and other troops to build treatment hospitals, and donated more than half of the $3.9 billion in relief funds collected from governments worldwide. Within six months, the outbreak was under control, and the U.S.-led effort was hailed as a template for handling future epidemics.

Chinese mining and construction firms had big businesses in Liberia, Guinea, and Sierra Leone, but Beijing struggled to mount a humanitarian response. Between August and October of that year, nearly ten thousand Chinese nationals fled those countries in a panic. China, unaccustomed to such missions, sent medical teams and supplies, but, over all, it contributed less than four per cent of the relief funds.

Six years later, however, neither nation can claim to have led the way in managing the COVID-19 pandemic, which has so far killed more than a quarter of a million people around the world. The efforts of both have been marred by denial, coverup, and self-deception. President Donald Trump's trade war and President Xi Jinping's hostility to Western influence had already frayed the countries' relationship to its most fragile point in decades. Now, in a bid to deflect criticism, they are turning against each other in perilous ways.

For President Xi, containing the disease, which first emerged in Hubei Province four months ago, has been a race against both a public-health and a political calamity. After initially silencing doctors who reported the virus, Beijing gained control of the outbreak by locking down Hubei, testing millions of people, and quarantining suspected cases, even if it required forcibly removing residents from their homes. By mid-March, China was reporting nearly no new cases, a claim that outside experts considered doubtful but in the neighborhood of truth.

Shaping the narrative of China's role in the pandemic will be more difficult. In April, the Associated Press obtained government documents showing that leaders in Beijing knew the potential scale of the threat by January 14th, but Xi waited six days before warning the public—a catastrophic interlude of dinners, train rides, and handshakes that helped unleash the pandemic. The government staged a public-relations offensive, touting China's exports of medical gear to other nations—a tactic dubbed "mask diplomacy." It also suggested, with no evidence, that the source of the virus was a delegation from the United States that had participated in the Military World Games in Wuhan in October. The offensive backfired: buyers complained of faulty or undelivered shipments, and U.S. officials accused China of using social media to promote divisive and false information.

The Trump Administration, for its part, has cut off funds to the World Health Organization and declined to join the European-led fund for vaccine research. Trump's delusions—that the virus would vanish in a "miracle," that an antimalarial drug would shortcut science, that ingesting disinfectant could help—have further reduced the Administration's reputation to a baleful farce. Last week, Kevin Rudd, the former Prime Minister of Australia, wrote in *Foreign Affairs* that the Administration had "left an indelible impression around the world of a country incapable of handling its own crises, let alone anybody else's." In Rudd's view, the "uncomfortable truth is that China and the United States are both likely to emerge from this crisis significantly diminished."

The Administration could credibly have criticized China's early mishandling of the virus, and its efforts to control international scrutiny of the virus's origins. Instead, the White House seized on a blame-Beijing strategy to undermine China's growing global power and shore up Trump's bid for reëlection. (An ad from a pro-Trump super PAC says,

ILLUSTRATIONS BY JOÃO FAZENDA

"To stop China, you have to stop Joe Biden.") Unnamed Administration officials floated revenge fantasies to reporters, such as abandoning U.S. debt obligations to China, an act that, investors noted, would gut America's financial credibility. As Adam Posen, the president of the Peterson Institute for International Economics, told the Washington *Post*, "In economic terms, this is worse than telling people to drink bleach."

In the riskiest line of attack, members of the Administration, conservative lawmakers, including Senator Tom Cotton, and Fox News have promoted an unverified theory that the coronavirus may have originated in an accidental leak from a Chinese virology lab. On April 30th, Trump said that he had seen convincing evidence of this, but gave no details. Secretary of State Mike Pompeo followed up three days later, claiming simply that there was "enormous evidence" to support the theory. More credible voices—including those of Anthony Fauci, the government's top expert on infectious diseases, and General Mark Milley, the chairman of the Joint Chiefs of Staff—have declined to endorse that view.

Yet Trump and Pompeo's rhetoric has some in the intelligence community concerned that the Administration may try to push on the origins of the virus much the way that, in 2002, Vice-President Dick Cheney and his chief of staff, Scooter Libby, pressured intelligence agencies to provide material that might support the theory that Saddam Hussein had weapons of mass destruction. Chris Johnson, a former China analyst at the C.I.A. who now heads the China Strategies Group, said, "If we have a smoking gun, the Administration would have leaked it. There are specters of Libby and Cheney, and it worries me."

More worrying, perhaps, this month in Beijing the Ministry of State Security presented to Xi and other leaders an assessment that reportedly describes the current hostilities as creating the most inhospitable diplomatic environment since the Tiananmen Square massacre. According to Reuters, some members of China's intelligence community regard the assessment as a Chinese version of the Novikov Telegram, a 1946 dispatch that the Soviet Ambassador to Washington, Nikolai Novikov, sent to Moscow, forecasting the advent of the Cold War.

To John Gaddis, the dean of Cold War historians, America's advantage over the Soviet Union hinged less on aggression than on competent governance. "The country can be no stronger in the world than it is at home," he said. "This was the basis for projecting power onto the world scene. We've lost that at home right now." If the Trump Administration uses the coronavirus to heighten its conflict with China, it will not only have ignored a basic lesson of U.S. history; it will expose America to yet another crisis for which it is plainly unprepared.

—Evan Osnos

DEPT. OF SCRUTINY
GLASS HOUSES

There was a TV commercial for Renuzit air freshener that ran half a century ago and scarred everyone who saw it. In the ad, a housewife has invited friends over to play bridge. But, as the ladies enter her home, they sniff, wrinkle their noses, and make mortifying comments along the lines of "Fried fish last night?" and "I thought George gave up cigars." The message was clear: anytime you allow people to enter your home, it—and you—will be ripped to shreds.

Such pitiless scrutiny is precisely what the coronavirus lockdown has forced on America's media personalities: if they want to remain on our screens, they must invite us, and our judgments, into their living rooms, bedrooms, and, in some cases, bathrooms. News shows are a special problem area, with viewers whipsawed between *Trump said what*? and *Who thought those sconces were a good idea*? Fortunately, an authoritative Twitter feed appeared in April to codify our cattier impulses. It's called Room Rater (@ratemyskyperoom), and, although often generous, it has earned a reputation as the pandemic's Mr. Blackwell.

For instance, when Beto O'Rourke did an interview from what looked like the dank basement in "The Silence of the Lambs," Room Rater gave him a 0 out of 10, and commented, "Oh, dear god. Organizing rescue mission. Blink twice if you can hear me." When Ann Coulter streamed herself positioned in front of a large black TV screen in a room painted a putrid yellow-green, she got a 0, too. The review—"Pretty much what you'd expect. Puke and a big TV"—received more than ten thousand likes.

Renuzit is no help here. Neither is sticking a ficus in the corner, although Samantha Vinograd, a national-security analyst on CNN, earned Room Rater bonus points by adding orange tulips to a handsome bookshelf. "She was definitely upping her game," said Claude Taylor, who launched the feed with his girlfriend, Jessie Bahrey. Taylor started Room Rater from a place of love, after admiring the wood-panelled den of a scientist he saw on cable news, and also the depth of field in the scientist's shot. The ratings are freely subjective, Taylor explained, and largely unburdened by professional expertise. He once worked as a travel photographer, so he tends to "think in terms of lighting/perspective/composition. Jessie has good taste. But that's all." The couple is quarantining apart: Bahrey manages a commercial greenhouse in British Columbia, and Taylor, who is based outside Washington, D.C., runs Mad Dog, a progressive political-action committee. (Mad Dog sponsored a billboard in Kentucky that dubbed Mitch McConnell "PUTIN'S MITCH.") Taylor admits to naked partisanship—Room Rater gushed over the "lovely" view of some unexceptional shrubbery visible through a window in Hillary Clinton's study—but, regarding bookshelves, there is one hard-and-fast rule. "You're going to get whacked on Room Rater if you put more than one of your own books cover forward," he said. "A little self-promotion is fine, but don't push it."

Welcome advice, since members of the TV-news workforce have been setting up their laptops with no apparent guidance from their bosses. "It's been pretty ad hoc," William Brangham, a correspondent for the "PBS NewsHour," said. He lives in a tidy-looking house and has a knack for using baskets as decorative accents. A "NewsHour" executive asked him to send an image of what

a living-room shot would look like: "The guy said, 'Great,' and that was pretty much it." (Room Rater score: a coveted 10.) Richard Stengel, an MSNBC contributor who was an Under-Secretary of State for Barack Obama, said that he received no advice "other than a producer telling me to have my computer higher." (Low angles lead to shots that are dominated by ceilings, nostrils, and saggy chins, as any Zoom-conference participant will attest.) Stengel's main concerns: "What books are showing? Where's the dog at?" (Room Rater score: 9.) Anne-Marie Green, an anchor for "CBS Morning News" and CBSN, set up her home studio in a bland spare bedroom. The one eccentric note is a lamp she bought on Etsy, the base of which looks like a stack of teapots; if you wanted to be nice, you might say it has an "Alice in Wonderland" vibe. Green left it in her shot as "a little indication that I'm more than just a talking head." (Room Rater, please weigh in here.)

Brangham has experienced the highs and the lows of viewer intimacy. Two of his three cats, an orange tabby named Pepper and a tan-and-black tabby named Tiki, have become Internet celebrities, thanks to their appearances napping on the couch. His curtains are another story. A *Times* piece on "décor peeping" quoted an interior designer named Elaine Griffin berating them. Why, she asked, "does he have the $19.99 panels from Bed, Bath & Beyond? Grommet curtains are the drapery equivalent of a No. 1 with fries." Brangham stood his ground, noting that grommet curtains are especially functional when quick lighting adjustments are needed on camera. "I didn't design my home to be on air," he added. "But then a pandemic happened."

—Bruce Handy

MOTHER OF INVENTION DEPT.
GIG ECONOMY

On a recent sunny afternoon, the experimental playwright Sibyl Kempson was on a porch in Margaretville, New York, in the Catskills, working a new gig: teaching, via FaceTime, a course called "Foraging for Edible & Medicinal Plants." Kempson was framed by puffy clouds, blue sky, and a bit of wooden rocking chair. She wore a fuzzy green hat. "It's a great time to learn something!" she said. Her foraging course is available on HireArtists.org, a site created to help artists weather the financial upheaval of COVID-19. There, one can hire artists for lessons in, say, the ukulele, Korean, creative coding, or the use of epoxy resin. "We're all giggers and freelancers," Kempson said. "Stuff got cancelled, and it's, like, tough cookies." Cancellation had happened to her—in German, no less. "I was supposed to be in Austria right now, directing an Ibsen adaptation that I wrote," she said. She stood up. "Do you want to look at some plants?"

A wild area behind the house was coming into spring—green shoots poking through dead leaves. "I'm going to start with one very familiar friend that is all over New York: the white pine," she said, in the focussed tone of a professor. (Kempson also teaches theatre at Sarah Lawrence.) She propped up her phone and presented a cluster of dried needles to the camera. "These are good for right now: they've got a ton of vitamin C, many times higher than citrus fruits," she said. "Just take the leaves right off and boil them, for a tea." She found some wood-ear mushrooms—gelatinous, good for the immune system, and tasty when thrown into a soba-noodle soup—and then came across some tufts of wild garlic mustard. She breathed in, appreciatively. "I wish you were here to smell it," she told her pupil. "You'll find this everywhere—it grows out of the sidewalks in Manhattan, and in Tompkins Square Park." She had once livened up an Easter turkey breast with wild garlic mustard and oniongrass: "Everybody went *crazy*." She held up a small sprig of cleavers, "a little charmer," good for allergy symptoms, and "in the mint family, I think." (It's in the coffee family.)

Kempson, who runs a theatre company she founded, called 7 Daughters of Eve, lived in New York City for many years and now lives in Newburgh; the Catskills house belongs to a friend. "Nature is nonnegotiable for me," Kempson said. She learned foraging a few years ago, at a wilderness-survival-skills course at the Tracker School, in the New Jersey Pine Barrens. "It changed my whole

SKETCHPAD
NOT PLAYING

BY JULIA ROTHMAN AND SHAINA FEINBERG

life," she said. A couple of years later, she studied with "an incredibly knowledgeable guy who goes by the name of Dan De Lion, who drives around the country by the season," teaching people from his Foragemobile. "He has an apothecary, and he's constantly making tinctures and salves." Kempson considers herself a foraging enthusiast, not an expert: "I never would have presumed to teach it, except for these extraordinary circumstances that we are in."

Kempson's foraging pupils, likely in extraordinary circumstances of their own, get a dose of thrifty survivalist scrappiness alongside their medicinal-plant identification: foraging can yield not just tincture ingredients but food. "The other day, I ran out of greens, and it's, like, wait a minute. There's a supermarket right outside," she said. She held up some roughage: curly dock, then prime for harvesting, when it was "more like spinach, less like collard greens, and delicious sautéed with olive oil and salt, and a little garlic, if you have it." Daylilies have edible tubers; Kempson dug into the earth and exposed a gnarled mass of bulbousness and roots. "I just wash them off, and I cook them like a little potato," she said. "Last night, I put them in a cast-iron frying pan with olive oil. And it was wonderful." Kempson loves potatoes: "I wrote a whole play about them." "Potatoes of August" was part of a trio of Kempson's "vegetable plays," in which potatoes, pumpkins ("Ich, Kürbisgeist"), and asparagus ("Spargel Time!") gain consciousness, and occasionally wreak havoc. In a similar vein, the Ibsen adaptation that she'd planned to stage in Austria takes a Symbolist approach to "A Doll's House," among other plays, exploring "Nora's origins as a wooden doll that Ibsen carved," she said. "And before that she was a block of wood. And before that she was a tree, and she had tree consciousness."

Sibyl Kempson

Consciousness, in both Kempson's life and work, is expansive. She's been eating curly-dock seeds—"I'll just grind them up and put them in my oatmeal"—which, she explained, are "said to bring prosperity." She looked thoughtful. "I have found that, when I eat them regularly, I am less worried about money, for whatever reason." She smiled. "Maybe it's my imagination. But whatever's in our imagination, I think, is part of reality."

—*Sarah Larson*

DEPT. OF VERSIFYING
MEMORANDA

Not long ago, as the world was halfway into week whatever of suspended animation, a man who lives with his wife and children in the Midwest arrived in New York City. He is a writer and a musician in his early fifties. His age means that he grew up listening to the Violent Femmes and Jim Carroll, reading poems by C. K. Williams and Galway Kinnell, and writing songs about the limited options available in a small city where the interstate keeps people flowing through without stopping. He became a career military man, medically trained, who did tours in Afghanistan and other unenviable places. His latest deployment was to New York, where his expertise could be put to use saving lives and alleviating suffering in a temporary facility for coronavirus patients.

In the days after his arrival, he began documenting what he saw. Walt Whitman, nursing the sick, wounded, and dying in the Civil War hospitals of Washington, D.C., famously wrote that "the real war will never get in the books." The military man's notes, jotted down between fourteen-hour shifts, are glimpses into the real war currently being fought in hospitals around the world. (He has not been authorized by the military to speak to the press.)

"I am double gloved at all times and wear a gown," he wrote, of his routine. "After I get home, every time I cough I think I have caught the virus. When I am floor leader, I have to carry a radio in case I need to call security. I always want to call just to tell them I am feeling insecure." He is bivouacking in a high-rise hotel, the kind of place that is normally packed with tourists and honeymooners. He and his colleagues are permitted to roam no more than a few blocks in any direction. He often records his observations in verse:

New York
is a
ghost town
where
even the
birds took
the last
train
to Jersey
and
the night
rises blue
black as
an alley
cat and
my combat
boots echo
across
Broadway
like gun
shots or
a heartbeat
fading into
a silence
so complete
you can
hear the
crying
voice of
each and
every star.

He wrote about the constant threat of losing a patient:

He was
too tall
for the
Army
hospital bed
and had
an eagle
tattooed on
his arm
he was
older than
60 and
looked
like a
biker the
kind of

guy who
thought he
could still
take anybody
the kind
of guy
who loved
to tell
people he
wasn't afraid
of anything
so it
really shook
me when
he spoke
in a
voice as
small as
my daughter's
asking me
if he
was going
to die.

There are funny bits, too, like his anecdote about composing a cute text message to one of his kids but accidentally sending it to fifty hospital colleagues instead. "I received almost fifty return messages of love," he wrote. "Hope at least a few actually mean it."

He wonders how long this hitch will last, and where the virus might take him next, as it leaps from city to city. Like Whitman in the eighteen-sixties, he thinks about how future generations might see us. "When I left home," he wrote, "I thought about what I would do when I arrived in New York: treat the sick and pray for the souls of the dead and wonder about 100 years from now, when all of this is just a fairy tale about death becoming a person who takes the form of a bat to fly across the world: the next generations' story of the witch that eats children."

—Mark Rozzo

SIDE EFFECTS
THE GLOVE CHALLENGE

Barehanded on a Citi Bike, Ryan McKenzie, the owner of a NoMad bar called Patent Pending, rolled through his hushed East Village neighborhood on cleanup patrol the other afternoon. In the early days of the lockdown, many New Yorkers marvelled at how litter had vanished from the streets, much as smog had cleared from the skies above New Delhi and Los Angeles. But McKenzie, after seeing a handwritten sign on a lamppost which read "PLEASE DON'T THROW YOUR GLOVES IN THE STREET," began noticing them: blue and purple disposable gloves dotting sidewalks and tree pits, and swirled by rain runoff onto sewer grates. Now he sees them everywhere.

"I'm an ocean guy," he said. "I surf. This will all wash out to the bays and, in time, be distributed all over the world. These gloves will be in Greenland." He added that the city's Department of Health and Mental Hygiene recommends frequent handwashing, not gloves, to the general public. "People are so selfish and shortsighted that they'll turn a health crisis into an environmental crisis as well," he said. "It drives me nuts."

Photographs of crumpled, discarded gloves have been appearing on social media lately, under the hashtag #TheGloveChallenge, which was started by Maria Algarra, the founder of a Miami-based organization called Clean This Beach Up. Parking lots are particularly hard hit; drivers doff their gloves before getting into their cars. Subway exits are another hot spot.

The gloves will wind up in waterways. Judith Enck, a former regional administrator for the Environmental Protection Agency and the founder of a nonprofit called Beyond Plastics, said, "The gloves may be too flimsy for sewage-plant screens to catch, and shoot right by them," ending up in riverbeds, and water columns, and on seafloors. Or they could wash out to sea directly from storm drains and sewer overflows. Even before the pandemic, the city's sewer system was spending nineteen million dollars a year to deal with so-called fatbergs, caused by the buildup of tons of personal-hygiene products, condoms, and wipes (many marketed as flushable).

When the plastic in vinyl and nitrile gloves gets in seawater, it becomes coated with dimethyl sulfide from algae and bacteria, which smells delectable to some species of birds, turtles, and marine mammals. Once ingested, the debris—even biodegradable plant-derived latex—can obstruct these creatures' digestive tracts and kill them. (Plastics can also disintegrate into smaller pieces, which enter the food chain at the very bottom; a new species of crustacean, discovered deep in the Mariana Trench, in 2014, was named *Eurythenes plasticus* for the contents of its stomach.)

"Those gloves will be very tied to this moment," Robin Nagle, an anthropologist-in-residence at the Department of Sanitation, said. "It's heartbreaking. You are deliberately putting off onto someone else a potentially deadly hazard." (Researchers are looking into whether the coronavirus might spread through spillovers of untreated sewage.)

In Hong Kong, glove-wearing is less common, but disposable masks are the norm. Gary Stokes, a co-founder of OceansAsia, a marine-conservation organization, began finding discarded medical masks on beaches about six weeks after COVID-19 alerts were first sounded. In New York, the castoffs are just starting to appear. Last week, dozens of gloves and masks were discovered on the shores of Jamaica Bay at Canarsie Pier, Rockaway Community Park, Dubos Point Wildlife Sanctuary, Floyd Bennett Field, Rockaway Beach, and MacNeil Park, and along the banks of the Bronx and Hackensack Rivers. "These are places no one goes when it's cold like this, except for a few birders. So they have to be drifting up," Alex Zablocki, the executive director of the Jamaica Bay–Rockaway Parks Conservancy, said, of the debris.

"The city needs to come up with a truly innovative campaign against glove litter," Enck said. It's easy for the issue to fall through the cracks of city bureaucracy. The Department of Sanitation is responsible for street sweeping, but sidewalk cleanup is the purview of the city's individual business-improvement districts. With most businesses closed, it's left to people like McKenzie to pick up litter.

A pandemic caused by airborne particles is not the best time for in-your-face confrontations, but McKenzie is undaunted. "I haven't seen someone throwing gloves in the gutter, but I'd probably be yelling at them if I did," he said, brandishing a new metal grabber that he had just bought on First Avenue. His original was stolen last week, from the sidewalk in front of his bar.

—Erik Baard

CORONAVIRUS CHRONICLES

BREATHING ROOM

Engineers take on the ventilator shortage.

By James Somers

Labs have scrambled to design easy-to-build ventilators—all with trade-offs.

On Monday, March 9th, Jake Kittell, a research engineer and machinist who builds scientific equipment for the University of Vermont, in Burlington, came into work fired up. Approaching another engineer, Carl Silver, he said, "We gotta build a ventilator."

"That sounds great," Silver replied. "What do we know about ventilators?"

Neither had ever seen one. But the coronavirus pandemic, once an abstraction, had recently made itself felt in Seattle, New York, and other American cities, and doctors had warned that a shortage of ventilators could hasten the deaths of thousands. "You feel like you want to do something," Silver recalled. The next week, Kittell e-mailed another professor at the university, Jason Bates, with whom they had worked in the past, and whom they knew to be a lung expert. We have a shop, he wrote. Can we build a ventilator?

Well, sure, Bates thought. He'd been working on the same problem for the previous four days.

Bates has wispy white hair and speaks with lucid, cheery confidence. Originally from England, he is a professor of medicine and of biomedical engineering, and teaches in both the university's engineering department and its medical school. The author of "Lung Mechanics: An Inverse Modeling Approach," he is one of the world's foremost experts on ventilator-induced lung injury, or VILI. Earlier in his career, at McGill University, in Montreal, Bates and his team invented a computer-controlled ventilator for mice that is still used by researchers. By tuning the machine's settings and seeing how a mouse's lungs react under pressure, scientists can study the physiology of lung disease. They can also explore how different styles of ventilation—in which air is moved into and out of the lungs at various volumes, pressures, and rhythms—can help or hurt a damaged lung.

The previous Friday, March 13th, Bates had heard from Matt Kinsey, a pulmonologist at the University of Vermont medical school. A COVID-19 patient there had been placed on a ventilator, and the physician in charge had decided to use a technique known as airway pressure release ventilation, or A.P.R.V., in which the device delivers near-constant air pressure, with an occasional quick release. (Try taking a long, slow breath in, then puffing out, quickly but gently; repeat.) Kinsey passed on a text message from the physician: "APRV is da bomb for covid." Bates said, "I was intrigued by this because I'd been studying A.P.R.V. and trying to figure out how to optimally deliver it." He suspected that COVID-19 inflicted more damage when the lungs were swinging between full inflation and full deflation, and had come to believe that A.P.R.V., by avoiding those extremes, was probably the gentlest ventilation strategy for those suffering from the disease. Now his theory was being put to the test.

The ventilators used in today's I.C.U.s are expensive, in large part because they are configurable. Newer models have touch screens that allow clinicians to change and track dozens of parameters, carefully adjusting how breaths are delivered. Bates began wondering whether it might be possible to build a pared-down ventilator that did nothing but provide A.P.R.V., to be used when the supply of fancier ventilators ran out. A typical I.C.U. ventilator costs between twenty-five thousand and fifty thousand dollars. Bates replied to Kittell's e-mail with a docu-

ILLUSTRATION BY DAVID PLUNKERT

ment titled "APRV for $10 (okay, maybe $50 . . .)."

In an included schematic, Bates had sketched a simple device: a box with three holes in it. Gas under pressure—which many hospitals have available from wall outlets—would flow into one hole and out another, to the patient. In normal breathing, exhalation typically takes about two to three times as long as inhalation; in A.P.R.V., the length of exhalation is reduced from several seconds to about half a second, while inhalation can take five seconds or more. To create this modified rhythm, the box's third hole would be blocked by a rotating disk that also had a hole in it, and that was spun by a motor. When the holes briefly aligned, the machine would exhale through the opening.

By the next day, Silver had built a prototype and sent Bates a video. A rubber glove was attached to the side of a box with some zip ties. The glove inflated, then deflated, then inflated again. "I saw that and everything changed," Bates said. Soon, the university agreed to fund the device. Kittell and Silver were given free rein in the shop; a lung analogue was brought in from the hospital for testing; a regulatory expert began preparing an emergency report for the Food and Drug Administration, which had created a special approval process for stopgap ventilators; and several local contract manufacturers were lined up so that the device, now known as the Vermontilator, could be mass-produced.

Engineering is quiet, methodical work, not often the stuff of high drama. But for many engineers the coronavirus has been a call to arms. Not since the space race has the whole world been so invested in problems that are fundamentally technical. During the Apollo 13 mission, a buildup of carbon dioxide was slowly poisoning the crew; the nation watched as the astronauts, working with engineers in Mission Control, jury-rigged a filter using duct tape and spare parts. In the film "Apollo 13," from 1995, an engineer with a pocket protector explains the situation to his colleagues: "The people upstairs handed us this one, and we gotta come through."

Since February, engineers in industry and academia have been working on designs for cheap, easy-to-build ventilators. Ford has christened its effort Project Apollo. And yet comparisons to the moon landings may understate the complexity of the problem. COVID-19 is a mysterious illness, and ventilators admit to many styles of operation. In the best case, the machines keep patients with failing lungs alive, buying time for the body to heal. In the worst case, they can aggravate lung damage. In the course of the pandemic, critical-care specialists have disagreed about how the devices should be operated and at what point in a patient's decline they should be used; mortality rates for COVID-19 patients on ventilators have ranged widely. Manufacturing a ventilator is difficult, especially during a pandemic, when supply lines are unreliable. Different designs negotiate different bargains between cost and functionality. Reaching the moon is challenging enough. It's harder when no one is sure where the moon is.

The lung is a passive participant in breathing. It's the diaphragm, a large muscle that cuts the human body horizontally in half, that does the work. When you inhale, your diaphragm pulls down like a piston, creating negative pressure around the lungs, while the muscles of the chest wall pull up and out. Air, drawn in through the nose and the mouth, flows through the trachea and into the bronchial tree, which fans out into the lungs. There, the breath nestles into hundreds of millions of gossamer sacs called alveoli. Blood, meanwhile, has arrived at the rendezvous through a network of capillaries, the smallest vessels in the circulatory system. Under a microscope, the alveoli look like bunches of grapes, and the capillaries like the mesh sacks that hold them. The tissues are so exquisitely thin that oxygen and carbon dioxide can diffuse across them, between air and blood. The contact surface between the two networks, if it were unfolded flat, would be more than half the size of a tennis court.

The alveolar flesh is elastic, and delicate like fruit pulp. It fares poorly when infected. The coronavirus multiplies in the alveolar cells, tearing them apart as it escapes; in the resulting chaos, fluid can leak into the air sacs, capillaries can constrict or clot, and tissues can become inflamed and stiffen. As the infection spreads, the number of healthy air sacs declines, and the exchange of gases becomes less efficient. A patient whose lung function degrades in this way can develop acute respiratory distress syndrome, or ARDS.

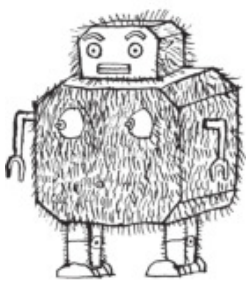
When a COVID-19 patient arrives at the hospital with shortness of breath, physicians use a pulse oximeter, clipped to a finger, to monitor her blood-oxygen level, while supplemental oxygen is delivered. If the oxygen level continues to decline, doctors bring in a ventilator. A device that looks like an oversized shoehorn is wedged over the patient's tongue and used to peel back the epiglottis. Then a tube is fed down the trachea, where a small balloon is inflated to hold it in place. Patients are usually sedated and paralyzed before being intubated; people suffering from COVID-19 may have to stay on ventilators for weeks, remaining sedated for the duration, and they are sometimes paralyzed again if their movement makes them hard to manage. It is an extreme intervention that, even when it saves a patient's life, takes a toll on the body.

At the most basic level, a ventilator is a pump, no different from the plastic resuscitator bags that paramedics squeeze to push air into a patient's lungs, in lieu of mouth-to-mouth. But, to avoid VILI, the lungs must be ventilated with care. Too little air pressure and the alveoli won't inflate; too much and they'll distend and get damaged. The balance grows harder to maintain as ARDS progresses. The lung is like a lattice, with each air sac supporting its neighbors. Damaged alveoli can press up against one another, spreading weakness with each breath; strained alveoli can burst. During exhalation, the insides of the alveoli, which get stickier as they fill with fluid, touch and cling together; inflating them again requires peeling them apart. In lung-physiology circles, this is sometimes called the "Velcro effect." "If you have that Velcro effect going on with every single breath, breath after breath, that's incredibly damaging in a fairly short time," Bates said. "You get in this vicious spiral that's really hard to get back from."

With a typical I.C.U. ventilator, a clinician has a few ways to modulate

the flow of air. She can adjust the "tidal volume"—the total amount of air to be delivered with each breath. She can designate a target pressure, in which case the ventilator delivers whatever volume is required to generate it. (Imagine filling a bicycle tire: you pump until the tire is firm.) She can also select the degree of PEEP, or positive end-expiratory pressure—the amount of pressure that's left in the lungs at the end of each exhalation. Higher PEEP prevents the air sacs from collapsing. By decreasing the duration of exhalation and maintaining higher inspiratory pressure, A.P.R.V., Bates's preferred ventilation style, does everything possible to avoid the Velcro effect.

The Vermontilator will likely cost around one or two thousand dollars when it ships—more than ten (or fifty) dollars, but a fraction of the cost of a full-fledged I.C.U. ventilator. It's so inexpensive because it's a minimalist device made from around fifteen parts, designed specifically for A.P.R.V. If the Velcro effect is as central to COVID-19 as Bates believes it to be, then this is a sound approach. But clinicians and researchers are still debating what kind of lung damage the coronavirus causes; they have come to recognize that it affects patients in unpredictable ways. "One of our mistakes at the beginning of this mass-casualty event was fixation: you come in with an idée fixe," Sharon Einav, an I.C.U. specialist in Jerusalem who co-authored a set of well-known guidelines for critical-care surges, told me. "People knew ARDS. The intensive-care community has been discussing ARDS for the last twenty years. As time passes, we're discovering that this disease has something more to it." The Vermontilator is a bet on the nature of the virus that may not pay off.



If we could produce more of the high-end ventilators already in use in hospitals, doctors could choose their own settings. This is the cause now taken up by Ford and General Motors, which have each collaborated with a ventilator-maker—G.E. Healthcare, which licenses a design from Airon, and Ventec, respectively—to scale up manufacturing. In mid-March, Ford kicked off Project Apollo, after the company learned about Airon's design; a personal introduction to representatives at Ventec led Mary T. Barra, the C.E.O. of G.M., to commit her company to Project V.

Ventec's VOCSN ventilator—the name stands for "ventilator, oxygen, cough, suction, and nebulizer"—was designed to perform the functions of five devices in one. "We are the first and only multifunction ventilator," Chris Brooks, the company's chief strategy officer, told me. (The VOCSN was approved by the F.D.A. in 2017.) For G.M., Ventec has created a simplified version, without the cough, suction, and nebulizer functions, known as the V+Pro. Even so, Brooks sees it as a fighter jet in a race with prop planes. "There's been a lot of conversation over the past few weeks with the shortage, a lot of very well-intentioned individuals and groups and very smart people, who have said, 'Hey, we can create a ventilator,' and 'Hey, we've developed a ventilator overnight, it's a hundred-dollar ventilator,'" he said. "There's a reason that there are very high-end, very powerful and precise critical-care I.C.U. ventilators. That truly is what these patients need."

On March 27th, in a tweet, President Trump urged G.M. to "START MAKING VENTILATORS, NOW!!!!!!"; in a subsequent tweet, he invoked the Defense Production Act to compel the company to do what it had started doing two weeks earlier. Preparing to manufacture ten thousand of Ventec's ventilators per month, as G.M. plans to do, has required a crash effort. On March 19th, G.M. flew six engineers to Bothell, Washington, to study the VOCSN production process. "We took a lot of pictures and a lot of video," Gerald Johnson, G.M.'s head of global manufacturing, told me. The VOCSN has around seven hundred parts; the V+Pro, around four hundred. By e-mailing lists of parts to around seventy of its "Tier 1" suppliers, G.M. was able to secure all of them by the following weekend. The scramble, Johnson said, was "miraculous." Suppliers had to adapt production lines to new specifications; they had to ask their own suppliers to do the same. The most elusive part, a special DC motor, is being shipped from India, where it is being made in a factory that had closed and had to be reopened.

With the parts secured, a G.M. component-manufacturing facility in Kokomo, Indiana, was retrofitted for ventilators. Two hundred and fifty skilled workers, recruited from within and outside G.M., began work after a week of training. A few dozen Ventec engineers are helping run the operation. At stations, each person takes on a subassembly task—plugging in a hose, mounting a circuit board with tiny screws—and then passes a bucket containing the incomplete ventilator to someone else. "Because of the urgency and speed, automation was kept down," Johnson said.

In mid-April, G.M. produced its first five units. Later in the month, the Kokomo plant and its trimmed-down ventilator were approved under an F.D.A. Emergency Use Authorization, and the first shipments were made to hospitals in Illinois and Indiana, at around sixteen thousand dollars per ventilator. (Ford is expected to begin delivering its first Airon ventilators by early July.) G.M. says that it is on pace to produce thirty thousand ventilators by the end of August.

Between the parsimonious minimalism of the Vermontilator and the maximalist ambition of Project Apollo and Project V, some engineers have ended up taking a middle path. In mid-March, at around the same time that Bates connected with Kittell and Silver to develop a prototype of the Vermontilator, Scott Cohen, a co-founder of New Lab, a center for researchers and startups in the Brooklyn Navy Yard, began reading up on the global ventilator hackathon. A doctor in Detroit had used a T-tube to split one ventilator among two or four patients. At the University of Florida, engineers were using a sprinkler valve and PVC water pipes to drive what looked like a wheezy bellows. At Rice University, a barebones ventilator was being built out of

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"In light of the current situation, we've dispensed with the weather report."

• •

a plastic resuscitator bag and a motor. Groups in Ireland and at M.I.T. were pursuing the same idea—all open source, with instructions and parts lists posted freely online. Cohen, who is not an engineer, turned to friends to help him find a project that New Lab could assist with. One wrote back immediately and said that M.I.T.'s effort was a good bet.

The M.I.T. E-Vent, as the school's ventilator is known, was based on a prototype that had been created ten years earlier, as a student project in a class on medical-device design. The students' prototype ran on a battery for three and a half hours, and consisted of a resuscitator bag placed in an enclosure and squeezed by a motor-driven cam. It had a pressure sensor, and settings for tidal volume (squeeze more or less air from the bag) and breaths per minute (squeeze the bag more or less often). The idea had never been developed beyond the class, but it had been revived in early March, and was now being worked on by a team of alumni, professors, and graduate students from the mechanical-, civil-, electrical-, and environmental-engineering departments. The rig had been given to Albert Kwon, an anesthesiologist at Westchester Medical Center, in New York State, who had tested it on a live pig. By Porcine Study No. 4, the device was said to perform comparably to a commercial ventilator operated in a volume-control mode.

The M.I.T. team aimed to build a "reference implementation"—a prototype that proved the viability of its design, which could then be shared for anyone to build. Like other open-source ventilator efforts, it had attracted interest not just from organizations staffed with experts but from amateurs who might try to build a device of their own. "I'm not in favor of this open-source—" Cohen said, interrupting himself. "It's misleading at a critical time to have people cowboying devices." He and his friend Marcel Botha, the founder of 10xBeta, a product-design and -development firm in New York, wanted to build the ventilators themselves, or to oversee their production. For a time, engineers in New York and Cambridge worked together; among other things, Botha persuaded Bon Ku, an emergency-medicine doctor at Thomas Jefferson Hospital, in Philadelphia, to loan the M.I.T. engineers one of his hospital's ventilators, so that they could compare it with their prototypes. But, eventually, the designs "forked," as often happens in open source.

The New Lab team began calling its device the Spiro Wave, after the Latin word meaning "to breathe." It has two hundred and fifteen parts; to avoid supply-chain problems, the engineers sourced as many of them as they could from within the state, and persuaded their suppliers to stay open as essential businesses. Under the vaulted ceilings of New Lab's converted Navy hangar, and, later, at a manufacturing facility operated by Boyce Technologies, in Long Island City, a dozen engineers have been working day and night, in twelve-hour shifts, to perfect the design and solve production challenges. The group has received a ten-million-dollar purchase order from New York City: three thousand units, at $3,333 each. Regulatory experts were brought on to help push through an application for an F.D.A. Emergency Use Authorization. The device—still essentially a pair of robotic arms that squeeze a bag—has a slick plastic casing and instructional videos. The Boyce facility is assembling about a hundred units per day.

A similar story has unfolded on the West Coast. On Wednesday, March 11th, David Van Buren, a senior engineer at NASA's Jet Propulsion Laboratory, began wondering if, under the circumstances, the lab was working on the right projects. He wrote an e-mail to colleagues proposing that perhaps they should be trying to solve the ventilator problem. His idea quickly made its way to the lab's senior management. "I do space missions," Roger Gibbs, the deputy director of the engineering and science directorate at J.P.L., told me. "I build things and we send them to other planets." By Monday, J.P.L. had also decided to build a ventilator.

At first, the engineers began in the spirit of Apollo 13. "The spark of this idea was 'Gee, can we at J.P.L. design a ventilator that uses parts scrounged from a garage, or from a vacuum cleaner, or a Home Depot?'" Gibbs said. "That idea lasted about six hours." They next considered developing a reference design and open-sourcing it for do-it-yourselfers. A doctor who had come in to consult waved them off, explaining that his hospital would only use a de-

vice that had been F.D.A.-approved. "He dropped a lot of reality on everybody about the level of engineering we'd have to do," Michelle Easter, a mechatronics engineer who usually works on actuators for spacecraft, said. The doctor explained what a ventilator was: he told them that, if a patient initiates an inhalation, the ventilator must notice; that ventilated air must be delivered at body temperature; that it should be humidified; that it has to provide high concentrations of oxygen. The engineers, working from first principles, peppered him with questions about pressures, volumes, and rates of change. They decided on a new goal: build the simplest possible easy-to-manufacture ventilator, made from readily supplied parts, that was capable of treating all but the most complex cases of COVID-19, and get it approved by the F.D.A.

The project unfolded in typical NASA fashion—the gathering of "functional requirements," the building of increasingly sophisticated prototypes, the holding of team-wide engineering reviews—except over a period of weeks, not years. The team had to adjust to the fact that its design would be produced at volume. "We're used to having one of the thing, not thousands of the thing," Easter said. The project had attracted more than a hundred participants, many of whom had never collaborated before. For almost forty days straight, they worked from sunup to sundown—brutal days that were a relief, in their way, from the ennui of lockdown. J.P.L.'s mountain campus, in Pasadena, was mostly empty; on breaks, at picnic tables outside the lab, the engineers watched families of deer graze among wildflowers.

J.P.L. worked up two designs in parallel. One is more portable, and uses an air compressor; it's in the final stages of testing. The other, like the Vermontilator, accepts air from a wall outlet. VITAL, as the device is known, operates in a unique "volume targeted, pressure limited, time limited" mode, invented at J.P.L. A clinician can set tidal volume, inspiration-expiration ratio, PEEP, and breaths per minute. Although it doesn't have a CO_2 sensor or a touch screen, it replicates many of the features of more sophisticated, customizable ventilators; a team of artists and illustrators helped design its faceplate. It is expected to cost between one and two thousand dollars, and its approximately three hundred parts have been carefully chosen to avoid siphoning supplies from medical-grade ventilator manufacturers. VITAL was tested at the Icahn School of Medicine at Mount Sinai, in New York, on a specialized lung simulator, and has received an Emergency Use Authorization from the F.D.A.; J.P.L. has begun looking for manufacturers.

In software, "feature creep" is the process by which an initially simple program, through the accretion of enhancements, becomes gargantuan, slow, and hard to use. Microsoft Word can take a long time to load in 2020, even though today's computers are incredibly powerful. The program's core functions haven't changed since 1983, but there are many new ones, and many features add complexity beyond themselves. If you want your program to have both an Equations Editor and Track Changes, then you must teach it to track changes to equations. Even the Undo function is a complex subprogram worthy of several full-time engineers: it must be able to undo not just typos but table reformattings, image resizings, and comments that have been added during a review session.

One wouldn't want to accuse a ventilator of feature creep, since each new feature has the potential to save lives. But a ventilator's complexity also expands nonlinearly as the number of parts, sensors, and functions grows. The problem is especially acute because medical devices must clear a high set of regulatory hurdles. As devices grow more capable, and more complex and expensive, they require more careful regulation. This dynamic, which is

"You can just leave it in that trash can."

acceptable during peacetime, might seem counterproductive during wartime. And yet the devices must still work, sustaining patients, sometimes for weeks, without glitches or failures.

The Vermontilator is as simple a ventilator as could be imagined: the first prototype had seven parts. Even so, most of the team's time has been spent adding safety valves, pressure regulators, and alarms—safety features required for an F.D.A. Emergency Use Authorization. The M.I.T. E-Vent and the Spiro Wave are more complicated. No one working on the problem envies anyone else's chosen point along the complexity curve. "That might be O.K. for a very short-term stopgap measure," Bates said, of the bag-based models. "But you could not have, generally speaking, someone with bad COVID lung injury on one of those things for hours or days, because you would destroy the lungs." In turn, M.I.T. engineers, when hearing about some of the more amateurish bag-based projects, shake their heads. Some respiratory experts insist on the value of top-tier ventilators; a doctor might find the CO_2 sensor indispensable, or argue that she's seen patients' respiration improve when they're moved from old, stockpiled ventilators to newer ones. "We've been amused at what people have been inventing as solutions," Sharon Einav, the I.C.U. specialist in Jerusalem, said. "It's like someone giving you a Fiat Punto when you normally drive a Ferrari. But we've not been in a situation where we've had to triage patients."

When the Spiro Wave was first imagined, in early March, there were fewer than a thousand confirmed coronavirus cases in New York. By the fourth week of March, there were twenty-six thousand. Ventilators were being sought from innumerable sources: Chinese philanthropists, the governor of Oregon. According to the *Times*, New York State awarded an eighty-nine-million-dollar contract to Yaron Oren-Pines, a Silicon Valley engineer with no apparent ventilator expertise, who claimed that he could supply the machines; none were delivered. (State representatives said that they were acting on the advice of the federal government.) To insure an adequate supply of ventilators, some hospitals began experimentally upgrading or modifying some of the other breathing devices that they had on hand. In early April, Cohen hosted some I.C.U. doctors at Boyce Technologies, where the Spiro Wave was being manufactured. "These guys were beat to shit," Cohen said. "They looked at the devices. . . . They were just, like, 'We need this, guys.' They just looked us all in the eye. 'When can we get it?'" Cohen's team said that the ventilators could be ready in four or five days; in the meantime, the engineers would work to polish their design.

By the time the Spiro Wave was ready for production, however, cases in New York had begun to decline. The nightmare scenario—doctors triaging patients, providing ventilators to some but not others—never came to pass; on the other hand, many people died outside hospitals, at home or in nursing homes, without ever being put on a ventilator. Officials are still trying to get an accurate count of deaths caused by COVID-19. Almost certainly, when such non-hospital deaths are included, the count will jump significantly.

There is a difference between holding on and having enough. The climactic language we have adopted during the first phase of the pandemic—waves, surges, peaks—may be misleading. The emergency continues. As locked-down cities open up, the virus will likely infect new people, many living in places without the health-care resources of big cities like New York and Seattle. "When I hear New York talking about the fact that they are down the backside of the mountain, I know they have been through hell," Michael Osterholm, the director of the Center for Infectious Disease Research and Policy, at the University of Minnesota, said last month. "But they have to understand, that's not the mountain. That is the foothills. They have mountains to go yet. We have a lot of people to get infected before this is over." G.M. and Ford are still aiming to contribute to the Strategic National Stockpile, a bulwark against second waves in major cities and a surge in rural cases. Spiro Wave is turning its attention to global distribution; Cohen and his team have been talking with leading health-care professionals in Ethiopia. "Those in the Southern Hemisphere are only just starting to feel it," he said.

In Vermont, hospitals have avoided becoming overwhelmed, and the curve has flattened. But Bates and his team, who anticipate receiving F.D.A. approval soon, are negotiating with the state for a purchase order. The team is contemplating a "Mark II" Vermontilator, which would still deliver A.P.R.V. but with more customizable settings. Bates recently received an e-mail from someone who works with the World Bank in the Central African Republic—a country of more than five million people, with only three ventilators. "That opens up a whole new potential for us," he said. (In addition to ventilators, of course, the country would need clinicians with the training to operate them.) Whatever the result, he continued, the Vermontilator project has enabled him "to work with people at a level of intensity that would never have been possible without this crisis. And so you find out just what is possible."

The missions have launched, destinations uncertain. No one can say for sure where or when the ventilators will be needed; no one knows which design is best or more cost-effective or reliable. Researchers are still trying to figure out how the virus does its damage. "If you don't understand the illness," Einav said, "even the most sophisticated ventilator is not going to work." Doctors treating COVID-19 are exploring ways to avoid intubating patients for as long as possible, using different equipment and techniques to support failing lungs. The month of March—when the official case count began skyrocketing in New York, and when ventilator projects at the University of Vermont, M.I.T., New Lab, Ford, G.M., and NASA began—already seems like the distant past. But building quickly, in advance of a murky future, may be what we need to do in a pandemic. On Friday, March 13th—the same day Bates got the text message about A.P.R.V.—Michael Ryan, the executive director of health emergencies at the World Health Organization, described the most important lesson he'd learned while fighting outbreaks of Ebola. "Be fast. Have no regrets," he said. "If you need to be right before you move, you will never win." ♦

IF YOU ASK ME: THE LAST QUARANTINE THINK PIECE

By Libby Gelman-Waxner

What the world needs right now is another endless musing on staying at home during the coronavirus pandemic; the C.D.C. has declared these pieces to be a symptom of COVID-19 that can be treated only by gentle snoring. When I am not working at my job as an associate buyer in juniors' activewear, I moonlight as America's most beloved film critic. But, with so little fresh product, even the most esteemed reviewers, like me, are in a quandary, which is why you're seeing so many Top Ten lists of foreign sci-fi movies from 1962. So, as a public service, I'd like to provide the only tips you really need:

1. Study Ivanka's tweets. So far, she's advised us to build living-room forts, have fun with eighteenth-century shadow puppets, and continually praise her for using the words "jobs," "empower," and "me." While I consider myself to be proudly useless and self-involved, Ivanka puts me to shame. I've been monitoring her hair, which resembles the entire L'Oréal color wheel; her heavy Benjamin Moore-grade makeup; and her always inappropriate wardrobe of Amish cocktail dresses. It's as if her dream were to become a society-lady panelist on "What's My Line?" in 1958. When she speaks, in her breathy Tweety Bird-at-boarding-school burble, the effect is complete. She's an American Girl doll with a trust fund and a Gucci attaché case.

2. Watch Dad TV. These are the shows that your dad relishes from his recliner and discusses at length over dinner, as if he were a consultant. They might as well all be called "Law & Order: Your Dad." Dick Wolf is your dad's Hugh Hefner. My favorites include "FBI," in which a team of attractive agents solves upscale crimes in under an hour, led by Missy Peregrym, whose hair is yanked back to look professional and yet is highlighted because she's on TV. "FBI: Most Wanted" depicts grimmer crimes in bleak suburban neighborhoods with terrible lighting. (Bad lighting and cheap flannel shirts have been identified as the chief causes of the opioid epidemic.)

The Mom versions of these shows are medical soaps. I enjoy "The Resident," in which an attractive team of Atlanta doctors cures just about everything in forty-five minutes, led by hunky Matt Czuchry in fitted scrubs and a motorcycle jacket, coupled up with the gorgeous Emily VanCamp as ultra-nurse Nic. When this dreamy pair saunter into the E.R., everyone sighs, "Thank God! The hot blonds are here." "New Amsterdam" is a teensy bit grittier, because it's set in New York, and it has an attractive medical team (including a gay psychologist), led by Ryan Eggold, who can remove tumors just by tilting his head like an adorable puppy.

Warning: Don't watch these shows with a real doctor, lawyer, or police officer, because they'll start screaming.

3. Never watch Trump's press briefings. They're unthinkably dull. Instead, catch the CNN clips of the President losing it, and then check Breitbart for the denials of everything he just said on camera. For a drinking game, take a sip whenever Trump calls a female journalist "nasty" or a male journalist "a loser." And, while it's fun to track Dr. Deborah Birx's infinite scarf collection, her masochism is voluntary and deadening. Dr. Anthony Fauci is the only hero here, but I wish, while Trump is blathering, that Fauci would mime silently screaming.

4. Watch your local news. Notice which at-home anchors have plastic orchids on their bookcases filled with paperbacks from college. Observe, "Oh, he lives in Westchester—that's why he's got a fire pit out the window, and a framed photo of his first wife and their kids."

5. When you put on your mask and gloves to go to Whole Foods, pretend you're a neurosurgeon. Ask your spouse to assist, to make the first incision, and to close up the patient. It's fun to do this in the produce aisle, using a head of lettuce.

6. Make no attempt to rediscover the joy of family meals. My perfect daughter, Jennifer, who's home from college, just told me, "Your generation not only decimated the planet but has made my future an economic quagmire. So I need eleven hundred dollars for this cute top made from recycled scrunchies that I saw on Etsy, and they donate three dollars from every purchase to buy smoothies for people who look sad and thoughtful on Instagram." My middle schooler, Sean, posted a TikTok, wearing my yoga pants and Chanel warmup jacket and doing a dance he calls Spin Mom on a Bender. My husband, Josh, who's home because orthodontics is considered elective medicine, is writing a novel called "Brace Yourself," which he calls "a no-holds-barred thriller about a rugged midtown orthodontist who saves the world by solving the ancient mystery of a pharaoh's overbite and defeating his modern-day death cult with the help of a gorgeous French dental hygienist." So we've all agreed to pretend that we're by ourselves in the apartment, while I scroll through photos of Melania planting a tree on the White House lawn to commemorate Earth Day, wearing a Victoria Beckham trenchcoat and Manolos, which is her way of declaring, "We're all in this together," if you ask me. ♦

LUCI GUTIÉRREZ

ANNALS OF ACTIVISM

CAN I HELP YOU?

The meaning of mutual aid during a pandemic.

By Jia Tolentino

We are not accustomed to destruction looking, at first, like emptiness. The coronavirus pandemic is disorienting in part because it defies our normal cause-and-effect shortcuts to understanding the world. The source of danger is invisible; the most effective solution involves willing paralysis; we won't know the consequences of today's actions until two weeks have passed. Everything circles a bewildering paradox: other people are both a threat and a lifeline. Physical connection could kill us, but civic connection is the only way to survive.

In March, even before widespread workplace closures and self-isolation, people throughout the country began establishing informal networks to meet the new needs of those around them. In Aurora, Colorado, a group of librarians started assembling kits of essentials for the elderly and for children who wouldn't be getting their usual meals at school. Disabled people in the Bay Area organized assistance for one another; a large collective in Seattle set out explicitly to help "Undocumented, LGBTQI, Black, Indigenous, People of Color, Elderly, and Disabled, folxs who are bearing the brunt of this social crisis." Undergrads helped other undergrads who had been barred from dorms and cut off from meal plans. Prison abolitionists raised money so that incarcerated people could purchase commissary soap. And, in New York City, dozens of groups across all five boroughs signed up volunteers to provide child care and pet care, deliver medicine and groceries, and raise money for food and rent. Relief funds were organized for movie-theatre employees, sex workers, and street vendors. Shortly before the city's restaurants closed, on March 16th, leaving nearly a quarter of a million people out of work, three restaurant employees started the Service Workers Coalition, quickly raising more than twenty-five thousand dollars to distribute as weekly stipends. Similar groups, some of which were organized by restaurant owners, are now active nationwide.

As the press reported on this immediate outpouring of self-organized voluntarism, the term applied to these efforts, again and again, was "mutual aid," which has entered the lexicon of the coronavirus era alongside "social distancing" and "flatten the curve." It's not a new term, or a new idea, but it has generally existed outside the mainstream. Informal child-care collectives, transgender support groups, and other ad-hoc organizations operate without the top-down leadership or philanthropic funding that most charities depend on. There is no comprehensive directory of such groups, most of which do not seek or receive much attention. But, suddenly, they seemed to be everywhere.

On March 17th, I signed up for a new mutual-aid network in my neighborhood, in Brooklyn, and used a platform called Leveler to make micropayments to out-of-work freelancers. Then I trekked to the thirty-five-thousand-square-foot Fairway in Harlem to meet Liam Elkind, a founder of Invisible Hands, which was providing free grocery delivery to the elderly, the ill, and the immunocompromised in New York. Elkind, a junior at Yale, had been at his family's place, in Morningside Heights, for spring break when the crisis began. Working with his friends Simone Policano, an artist, and Healy Chait, a business major at N.Y.U., he built the group's sleek Web site in a day. During the next ninety-six hours, twelve hundred people volunteered; some of them helped to translate the organization's flyer into more than a dozen languages and dis-

Organizers hope that, after the coronavirus, we'll expect more of one another.

ILLUSTRATION BY NA KIM

tributed copies of it to buildings around the city. By the time I met him, Elkind and his co-founders had spoken to people hoping to create Invisible Hands chapters in San Francisco, Los Angeles, Boston, and Chicago. The group was featured on "Fox & Friends," in a segment about young people stepping up in the pandemic; the co-host Brian Kilmeade encouraged viewers to send in more "inspirational stories and photos of people doing great things."

At the Fairway, Elkind, who has dark hair and a chipper student-body-president demeanor, put on a pair of latex gloves and grabbed a shopping basket, which he sanitized with a wipe. He was getting groceries for an immunocompromised woman in Harlem. "Scallions are the onion things, right?" he said, as we wound through the still robust produce section. At the time, those who signed up to volunteer for Invisible Hands joined a group text; when requests for help came in, texts went out, and volunteers claimed them on a first-come-first-served basis. They called the recipients to ask what they needed, then dropped the grocery bags at their doorsteps; the recipients left money under their mats or in mailboxes. The group was planning to raise funds to buy groceries for those who couldn't afford them, Elkind told me. While we stood in the dairy section trying to decide between low-fat Greek yogurt and nonfat regular—the store was out of nonfat Greek—a reporter from "Inside Edition" materialized and began snapping photographs. Elkind apologized; he hadn't meant to double-book media engagements. "Not to be trite, but I feel like this is spreading faster than the virus," he said.

The next day, Representative Alexandria Ocasio-Cortez held a public conference call with the organizer Mariame Kaba about how to build a mutual-aid network. Kaba is the founder of Project Nia, a prison-abolitionist organization that successfully campaigned for the right of Illinois minors to have their arrest records expunged when they turn eighteen. "There are two ways that this can go for us," Ocasio-Cortez said on the call. "We can buy into the old frameworks of, when a disaster hits, it's every person for themselves. Or we can affirmatively choose a different path. And we can build a different world, even if it's just on our building floor, even if it's just in our neighborhood, even if it's just on our block." She pointed out that those in a position to help didn't have to wait "for Congress to pass a bill, or the President to do something." The following week, the *Times* ran a column headlined "Feeling Powerless About Coronavirus? Join a Mutual-Aid Network." Vox, Teen Vogue, and other outlets also ran explainers and how-tos.

Mutual-aid work thrives on sustained personal relationships, but the coronavirus has necessitated that relationships be built online. After meeting Elkind, I joined a Zoom call with thirteen students at the University of Minnesota Medical School who had been pulled from their classes or clinical rotations. Their mentors and teachers were putting in fifteen-hour hospital shifts, then waiting in long lines to buy diapers before going home to their kids. The students had rapidly assembled a group called the Minnesota COVIDSitters, which matched nearly three hundred volunteers with a hundred and fifty or so hospital workers—including custodians, cooks, and other essential employees. The students insured that volunteers had immunizations and background checks; they established closed rotations of three to five volunteers for each family in need. On the Zoom call, everyone was focussed and eager, crisis adrenaline masking their fatigue. One student held a mellow, pink-cheeked infant on his shoulder.

Just a few days before, on Twitter, I had seen a photograph of a handwritten flyer that a thirty-three-year-old woman named Maggie Connolly had posted in the Brooklyn neighborhood of Carroll Gardens, asking elderly neighbors to get in touch if they needed groceries or other help. Connolly, a hair-and-makeup artist, was newly out of work, and figured that many older people might not see aid efforts that were being organized online. The picture of the sign got attention on the Internet, and Connolly ended up on the "Today" show; soon afterward, she began arranging pharmacy runs and wellness checks for her neighbors and getting e-mails from people around the world who'd been inspired to put up flyers of their own. "My mom's always told me that if I feel anxious and depressed I should think of how I can be of service to somebody," she told me. "Hopefully, when we control the virus a little bit more and get back to regular life, this will have been a wake-up call. I think people aren't used to being able to ask for help, and people aren't used to offering."

There's a certain kind of news story that is presented as heartwarming but actually evinces the ravages of American inequality under capitalism: the account of an eighth grader who raised money to eliminate his classmates' lunch debt, or the report on a FedEx employee who walked twelve miles to and from work each day until her co-workers took up a collection to buy her a car. We can be so moved by the way people come together to overcome hardship that we lose sight of the fact that many of these hardships should not exist at all. In a recent article for the journal *Social Text*, the lawyer and activist Dean Spade cites news reports about volunteer boat rescues during Hurricane Harvey which did not mention the mismanagement of government relief efforts, or identify the possible climatological causes of worsening hurricanes, or point out who suffers most in the wake of brutal storms. Conservative politicians can point to such stories, which ignore the social forces that determine the shape of our disasters, and insist that voluntarism is preferable to government programs.

A decade ago, the writer Rebecca Solnit published the book "A Paradise Built in Hell," which argues that during collective disasters the "suspension of the usual order and the failure of most systems" spur widespread acts of altruism—and these improvisations, Solnit suggests, can lead to lasting civic change. Among the examples Solnit cites are tenant groups that formed in Mexico City after a devastating earthquake, in 1985, and later played a role in the city's transition to a democratic government. Radicalizing moments accumulate; organizing and activism beget more organizing and activism. As I called individuals around the country who were setting up coronavirus-relief efforts, I kept encountering people who had participated in anti-globalization protests in the early two-thousands, or joined the Occupy movement, or organized grassroots campaigns in the aftermath

of the 2016 Presidential election. In 2017, as wildfires ravaged Northern California, a collective of primarily disabled queer and trans people, who called themselves Mask Oakland, began giving out N95 masks to the homeless; in March and April, they donated thousands of masks that they had in reserve to local emergency rooms and clinics.

Radicalism has been at the heart of mutual aid since it was introduced as a political idea. In 1902, the Russian naturalist and anarcho-communist Peter Kropotkin—who was born a prince in 1842, got sent to prison in his early thirties for belonging to a banned intellectual society, and spent the next forty years as a writer in Europe—published the book "Mutual Aid: A Factor of Evolution." Kropotkin identifies solidarity as an essential practice in the lives of swallows and marmots and primitive hunter-gatherers; coöperation, he argues, was what allowed people in medieval villages and nineteenth-century farming syndicates to survive. That inborn solidarity has been undermined, in his view, by the principle of private property and the work of state institutions. Even so, he maintains, mutual aid is "the necessary foundation of everyday life" in downtrodden communities, and "the best guarantee of a still loftier evolution of our race."

Charitable organizations are typically governed hierarchically, with decisions informed by donors and board members. Mutual-aid projects tend to be shaped by volunteers and the recipients of services. Both mutual aid and charity address the effects of inequality, but mutual aid is aimed at root causes—at the structures that created inequality in the first place. A few days after her conference call with Ocasio-Cortez, Mariame Kaba told me that mutual aid couldn't be divorced from political education and activism. "It's not community service—you're not doing service for service's sake," she said. "You're trying to address real material needs." If you fail to meet those needs, she added, you also fail to "build the relationships that are needed to push back on the state."

Kaba, a longtime Chicago activist who now lives in New York and runs the blog Prison Culture, describes herself as an abolitionist, not as an anarchist. She wants to create a world without prisons and policing, and that requires imagining other structures of accountability—and also of assistance. "I want us to act as if the state is not a protector, and to be keenly aware of the damage it can do," she told me. People who are deeply committed to mutual aid think of it as a crucial, everyday practice, she said, not as a "program to pull off the shelf when shit gets bad."

Historically, in the United States, mutual-aid networks have proliferated mostly in communities that the state has chosen not to help. The peak of such organizing may have come in the late sixties and early seventies, when Street Transvestite Action Revolutionaries opened a shelter for homeless trans youth, in New York, and the Black Panther Party started a free-breakfast program, which within its first year was feeding twenty thousand children in nineteen cities across the country. J. Edgar Hoover worried that the program would threaten "efforts by authorities to neutralize the BPP and destroy what it stands for"; a few years later, the federal government formalized its own breakfast program for public schools.

Crises can intensify the antagonism between the government and mutual-aid workers. Dozens of cities restrict community efforts to feed the homeless; in 2019, activists with No More Deaths, a group that leaves water and supplies in border-crossing corridors, were tried on federal charges, including driving in a wilderness area and "abandoning property." But disasters can also force otherwise opposing sides to work together. During Hurricane Sandy, the National Guard, in the face of government failure, relied on the help of an Occupy Wall Street offshoot, Occupy Sandy, to distribute supplies.

"Anarchists are not absolutist," Spade, the lawyer and activist, told me. "We can believe in a diversity of tactics. I spend my life fighting for people to get welfare benefits, for trans people to get health-care coverage." Kaba isn't doctrinaire, either; she had, after all, partnered with Ocasio-Cortez, a member of the federal government, to help people learn how to help one another. (Ocasio-Cortez, for her part, insisted, on Twitter, that organizers and activists, not politicians, are often the ones who "push society forward.") Still, there is a real tension between statist and anarchist theories of political change, Kaba pointed out. In trying to help a community meet its needs, one group of organizers might suggest canvassing for political candidates who support Medicare for All. Another might argue that electoral politics, with its top-down structures and its uncertain results, is the wrong place to direct most of one's energy—that we should focus instead on building community co-ops that can secure health care and opportunities for work. But sorting out the conflict between these visions is part of the larger project, Kaba suggested, and a task for multiple generations. The day-to-day practice of mutual aid is simpler. It is a matter, she said, of "prefiguring the world in which you want to live."

By April, as the death toll rose in New York City, many people I knew in Brooklyn had begun working with a mutual-aid group called Bed-Stuy Strong, which serves the neighborhood of Bedford-Stuyvesant. Once predominantly black, the neighborhood has, in the past few decades, seen an influx of white residents. Bed-Stuy Strong was started by the writer Sarah Thankam Mathews, whose family moved to the United States from Oman when she was seventeen. Mathews organized the group on Slack, and it initially consisted of the Slack demographic: relatively privileged youngish people familiar with the digital workflows of white-collar offices. But volunteers plastered the neighborhood with flyers, and word of the group started to spread through phone calls and text messages. Hundreds of people began joining every day.

James Lipscomb, a former computer programmer in his sixties, who moved to Bed-Stuy from South Carolina when he was a teen-ager, learned about the group on Facebook—an acquaintance had called the organization's Google Voice number, then written a post wondering if the whole thing was a scam. Lipscomb, who survived polio at age four,

after spending months in an iron lung, has limited mobility, and lives alone. He had friends who were already sick with the coronavirus, and he knew that he should stay inside. Not long after he saw the Facebook post, a friend phoned him and said, "James, call this number. They'll get your food." He left Bed-Stuy Strong a voice mail, and someone called him back a few hours later. The next day, a volunteer arrived in his lobby with three bags of groceries. "I looked at everything and was like a kid at Christmas," he told me. (He described himself as a "halfway decent cook," with special skills in the chili arena.) Lipscomb is a longtime member of the Bed-Stuy chapter of Lions Club International, the first black chapter in New York State. He told the club members about his experience, and the club donated two hundred dollars to Bed-Stuy Strong. He also went back to the person who had written the skeptical Facebook post, he told me. "And I said, 'Look, this group is the best-kept secret going now!'"

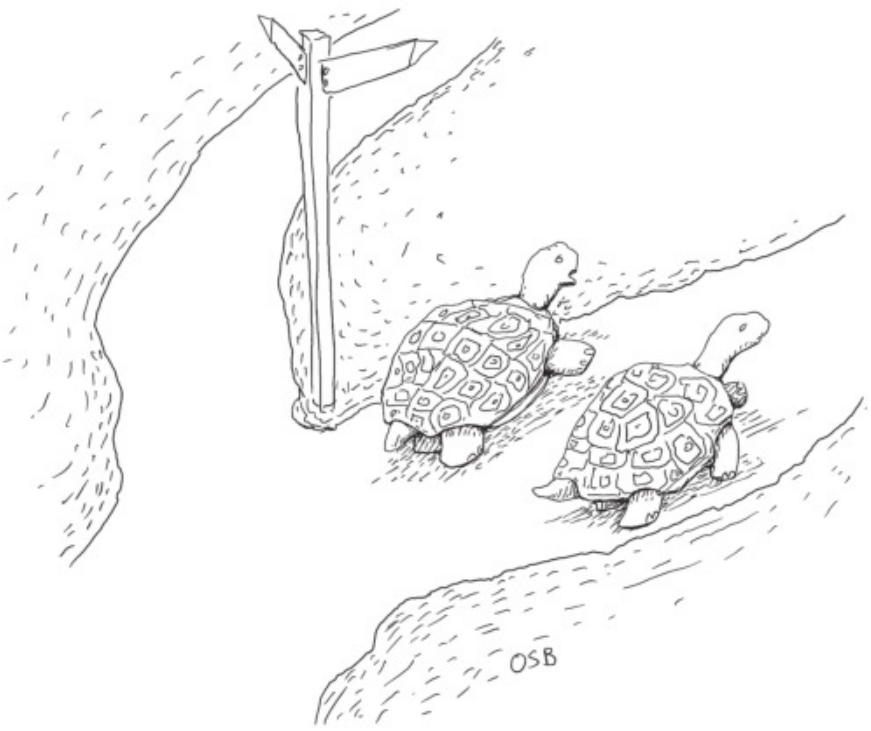
When I first spoke with Mathews, she quickly pointed out that other local groups—such as Equality for Flatbush, which organizes against unjust policing and housing displacement—had been "doing the work for much longer." She told me that she didn't want to raise her hand and say, "Look, we're new, we're so shiny, we're on Slack!" The organization's strictly local focus reflects a principle of many mutual-aid groups: that neighbors are best situated to help neighbors. Ocasio-Cortez's team, after the conference call, distributed a guide hashtagged #WeGotOurBlock, with instructions for building a neighborhood "pod" by starting with groups of five to twenty people, drawing on ideas popularized by the Bay Area Transformative Justice Collective. The idea of "pod-mapping," according to one of the group's founders, Mia Mingus, is to build lasting networks of support, rather than indulge in "fantasies of a giant, magical community response, filled with people we only had surface relationships with."

Mingus, a disability activist who was born in Korea and brought up by a white couple in the U.S. Virgin Islands, told me that she'd been spending her days checking in on her pod, dropping off food and supplies for people, and her nights reading articles about layoffs and hospitalizations and new mutual-aid groups. She felt, she said, like the earth was moving beneath her feet. More people were recognizing that the problems Americans were facing weren't caused just by the virus but by a health-care system that ties insurance to employment and a minimum wage so low that essential workers can't save for the emergencies through which they will be asked to sustain the rest of the country. She'd learned, after years of organizing, that, in some ways, people are attracted to crisis—to letting problems escalate until they're forced to spring into action. "Pods give us the structure to deal with smaller harms," she said. "And we have to deal with smaller harms, or this is where we end up."

Mathews told me that Bed-Stuy Strong was trying to plan for coming hardships that the government would also probably fail to adequately address. Unemployment would skyrocket in the neighborhood, and community needs would evolve. She is committed to the chaos of collective decision-making; the group's discussions about operations and priorities happen publicly, with input from anyone who wants to contribute. There are no eligibility criteria for grocery recipients, other than Bed-Stuy residency. (A distinctive quality of mutual aid, in general contrast with charity and state services, is the absence of conditions for those who wish to receive help.)

Jackson Fratesi, a friend of mine in the neighborhood who used to oversee last-mile delivery operations for Walmart stores in New York and now helps run logistics for Bed-Stuy Strong, said, "We have guesses about what community needs will be in the future, but we also know that some of these needs will blindside us, and we're trying to prepare for that." He added, "And—who knows?—maybe one of the things we'll be blindsided by is the government actually doing a good job."

In her book "Good Neighbors: The Democracy of Everyday Life in America," the Harvard political scientist Nancy L. Rosenblum considers the American fondness for acts of neighborly aid and coöperation, both in ordinary times, as with the pioneer practice of barn raising, and in periods of crisis. In Rosenblum's view, "there is little evidence that disaster generates an appetite for permanent, energetic civic engagement." On the contrary, "when government and politics disappear from view as they do, we are left with the not-so-innocuous fantasy of ungoverned



"You can't just shout 'Turn left!' halfway through the intersection."

reciprocity as the best and fully adequate society." She cites the daughter of Laura Ingalls Wilder, Rose Wilder Lane, who helped her mother craft classic narratives of neighborly kindness and became a libertarian who opposed the New Deal and viewed Social Security as a Ponzi scheme.

I called Rosenblum to ask what she made of the current wave of ungoverned reciprocity. Disasters like this one, she said, have less to teach us about solidarity among neighbors than about our "need for a kind of nationwide solidarity—in other words, a social safety net." She went on, "If you look at these really big, all-enveloping things—climate change, a pandemic—and think they will be solved by citizen mobilization, it may be necessary to consider the possibility that these problems are actually going to be solved technocratically and politically, from the top down, that what you need are experts in government who are going to say, 'You just have to do this.' My own opinion is that you need both top-down and bottom-up." She continued, "But, still, the idea that what we need most, or only, is social solidarity, civic mobilization, neighborly virtue—it's not so."

Rosenblum, though, told me that she had noticed a difference between the mutual-aid groups that were forming in the wake of the coronavirus and the sorts of disaster-relief work that she had studied in the past. Because it had been clear from the beginning that the pandemic would last indefinitely, many groups had immediately begun thinking about long-term self-management, building volunteer infrastructures in order to get ahead of the worst of the crisis, and thinking about what could work for months rather than for days. "That's interesting," she said. "And I think it's new."

On Day Twelve of my self-isolation, I checked in with the Minnesota COVIDSitters. The governor there, Tim Walz, a Democrat, had mandated that health-care workers have access to free child care at school facilities, and I wanted to see how the government's efforts were changing the group's work. The COVIDSitters, like Bed-Stuy Strong, had been careful to coördinate with more established organizations, hoping to reduce redundancy and share resources. The group had funnelled donations—many from health-care workers who wanted to pay their volunteer babysitters—toward homeless shelters and food banks.

There were some things that the group could do more easily than the state. Families "need a child-care center that operates in traditional M-F fashion, like school would," Londyn Robinson, one of the group's organizers, told me in an e-mail, "and they also need a COVIDSitter-like option to fill in the cracks." I had heard as much from Emily Fitzgerald, a nurse-midwife in Minnesota who, when the coronavirus first hit the region, had been frantically running child-care calculations, anticipating her team's change from twelve-hour shifts to twenty-four-hour shifts. When she learned about COVIDSitters, she told me, she became emotional. "You're just not expecting to be taken care of in that way," she said. The Sitters were seeking at least three hundred and fifty new volunteers to support nearly a hundred unmatched families. At the end of March, the group became a nonprofit corporation, so that it could apply for state grants. The Sitters had also shared their blueprint with more than a hundred and thirty other med schools, thirty of which had set up operational sister groups.

Invisible Hands had also registered as a nonprofit, Liam Elkind told me when we spoke again, in mid-April. Lawyers helped the group establish bylaws, official titles, and oversight practices. The group had signed up twelve thousand volunteers and taken about

four thousand requests. It had also raised fifty-seven thousand dollars for a subsidy program—whereby needy households could receive free weekly food baskets with staples such as milk, bread, and eggs—but it had suspended the program after demand increased, making it unsustainable. Money in reserve is going to administrative costs, such as software, insurance, and legal fees. Elkind was still in Morningside Heights, finishing the semester online. ("I have not prepared very well for my presentation tomorrow on comm law," he told me.) Maggie Connolly, who put up the handwritten sign in Carroll Gardens, had started working with Invisible Hands, making grocery deliveries in her neighborhood. "I still love what I do as a hair-and-makeup artist, and I can't wait to get back to work," she said. "But this has really made me realize that I would like to shift more time into doing work that serves others." She had raised money from people she knew who were also out of work—photographers, stylists, models—to buy food boxes for New York hospital staff.

On Day Twenty-two of self-isolation, I called Fratesi and Mathews, from Bed-Stuy Strong, on Zoom. The group, they said, had signed up twenty-five hundred volunteers, a third of whom were active in the group's Slack channel on a daily or near-daily basis, and a fifth of whom had signed up to shop and make deliveries. Mathews hoped to sustain the network with the small donations it was getting, most of which seemed to be coming from Bed-Stuy residents and people who knew them. The group's tech and operations teams had revamped the online system so that the most urgent requests—from people who'd been waiting the longest or who had explicitly said that their cupboards were bare—were continually resurfaced for delivery volunteers. "Oh, Sarah, what do you think—should we have a second Google Voice number where we just give people a phone tree of other resources?" Fratesi asked at one point, thinking through logistics as I interviewed them. New York City had announced a daily free-meal program, and other nonprofits were turning to coronavirus relief. We talked about whether mutual-aid work represented what the state ought to be doing, or what the state could never do properly, or maybe both. Three minutes after we finished our Zoom call, Bernie Sanders announced that he was suspending his Presidential campaign. "Our best-case scenario is that Biden wins????" Fratesi texted me. "DIRECT ACTION IT IS THEN, I GUESS." By the beginning of May, Bed-Stuy Strong had provided at least a

MEN WAITING FOR A TRAIN

At first they stand, orphaned, like a line of birds,
First on one foot, then the other, in unison,
Like any other unnamed someones, as if poised
For a firing line, until someone thinks he knows
A train is coming in the sparrow-morning light,
And someone else taps a pack of cigarettes
Against his gloved hand, not exotic,
But it's as if he's slipped into captivity. One
Of those corner-of-the-eye, white-sky
Days, late winter a hammer against the
Platform, and gathered above the grave-
Line of the gap enough snow
To consider the blue clouds floating,
Like forgiveness, above us all. Only two
Are cresting at this moment, one a show
Of hands, an explosion of clapping, the
Other a mask of a baptismal face
Failing behind the city's blood-brown
Skyline. Whoever screamed just then,
Then quieted, then shouted, high, like a crow,
Leaves me filled with absence, listening
For silences, cupping my ears. For
A moment, nothing is being celebrated,
Nothing undone, or measured, nothing
Moves, or rings, in the air, and in the next
Moment sirens are continually dying in
The distance. In the time it takes the train's
Doors to open, and close, and for the train
To swirl us all off, half in, half out, of
Our own wills, underground, something
Like joy pours out of the cloudburst heart,
And whatever feelings each one of us has had
Goes off into the daylight without us.

—David Biespiel

week's worth of groceries to more than thirty-five hundred people in the neighborhood. The group had raised a hundred and forty thousand dollars and spent a hundred and twenty-seven thousand dollars on food and supplies, such as medicine. What was left would keep the group operating for another week.

All the organizers I spoke to expressed a version of the hope that, after we emerge from isolation, much more will seem possible, that we will expect more of ourselves and of one another, that we will be permanently struck by the way our actions depend on and affect people we may never see or know. But the differences among the many volunteer groups that had suddenly sprouted were already sharpening. Some crisis volunteers find their work encouragingly apolitical: neighbors helping neighbors. Some are growing even more committed to socialist or anarchist ideals. "Community itself is not a panacea for oppression," Kaba told me. "And if you think that this work is like programming a microwave, where an input leads to immediate output, that's capitalism speaking." It will be a loss, Spade told me, if mutual aid becomes vacated of political meaning at the moment that it begins to enter the mainstream—if we lose sight of the fundamental premise that, within its framework, we meet one another's needs not just to fix things in the moment but to identify and push back on the structures that make those needs so dire. "What happens when people get together to support one another is that people realize that there's more of us than there is of them," he said. "This moment is a powder keg."

The difficulty of sustaining this more radical vision was also becoming clear. Bed-Stuy Strong has one week of runway at a time. When I asked Rebecca Solnit about the evidence that disasters have prompted lasting civic changes, she pointed me to a number of specific organizations, and described their histories, but she also emphasized something less tangible, something she "heard over and over again from people," she said. "They discovered a sense of self and a sense of connection to the people and place around them that did not go away, and, though they went back to their jobs in a market economy and their homes, that changed perspective stayed with them and maybe manifested in subtler ways than a project." She added, "If we think of mutual aid as both a series of networks of resource and labor distribution and as an orientation, the former may become less necessary as 'normal' returns, but the latter may last."

The coronavirus has already ushered in changes that would have been called impossible in January: evictions have been suspended, undocumented farmworkers have been classified as essential, the Centers for Disease Control has proclaimed that coronavirus testing and treatment will be free. There are those who will want to return to normal after this crisis, and there are those who will decide that what was regarded as normal before was itself the crisis. Among the activists I talked to in the past several weeks was a thirty-year-old named Jeff Sorensen, who was working with the Washtenaw County Mutual Aid group, which was first created to help students affected by the closure of the University of Michigan. Some activists in the group had been involved with an existing mutual-aid network, in Ypsilanti, that was founded last year with long-term goals and radical principles in mind. Sorensen said that he was determined to be hopeful. "These things that are treated as ridiculous ideas," he told me, "we'll be able to say, 'It's not a ridiculous idea—it's what we did during that time.'" ♦

A REPORTER AT LARGE

FIVE OCEANS, FIVE DEEPS

The explorers who set one of the last meaningful records on earth.

By Ben Taub

Sea level—perpetual flux. There is a micromillimetre on the surface of the ocean that moves between sea and sky and is simultaneously both and neither. Every known life-form exists in relation to this layer. Above it, the world of land, air, sunlight, and lungs. Below it, the world of water, depth, and pressure. The deeper you go, the darker, the more hostile, the less familiar, the less measured, the less known.

A splash in the South Pacific, last June, marked a historic breach of that world. A crane lowered a small white submersible off the back of a ship and plonked it in the water. For a moment, it bobbed quietly on the surface, its buoyancy calibrated to the weight of the pilot, its only occupant. Then he flipped a switch, and the submarine emitted a frantic, high-pitched whirr. Electric pumps sucked seawater into an empty chamber, weighing the vessel down. The surface frothed as the water poured in—then silence, as the top of the submersible dipped below the waterline, and the ocean absorbed it.

Most submarines go down several hundred metres, then across; this one was designed to sink like a stone. It was the shape of a bulging briefcase, with a protruding bulb at the bottom. This was the pressure hull—a titanium sphere, five feet in diameter, which was sealed off from the rest of the submersible and housed the pilot and all his controls. Under the passenger seat was a tuna-fish sandwich, the pilot's lunch. He gazed out of one of the viewports, into the blue. It would take nearly four hours to reach the bottom.

Sunlight cuts through the first thousand feet of water. This is the epipelagic zone, the layer of plankton, kelp, and reefs. It contains the entire ecosystem of marine plants, as well as the mammals and the fish that eat them. An Egyptian diver once descended to the limits of this layer. The feat required a lifetime of training, four years of planning, a team of support divers, an array of specialized air tanks, and a tedious, thirteen-hour ascent, with constant decompression stops, so that his blood would not be poisoned and his lungs would not explode.

The submersible dropped at a rate of about two and a half feet per second. Twenty minutes into the dive, the pilot reached the midnight zone, where dark waters turn black. The only light is the dim glow of bioluminescence—from electric jellies, camouflaged shrimp, and toothy predators with natural lanterns to attract unwitting prey. Some fish in these depths have no eyes—what use are they? There is little to eat. Conditions in the midnight zone favor fish with slow metabolic rates, weak muscles, and slimy, gelatinous bodies.

An hour into the descent, the pilot reached ten thousand feet—the beginning of the abyssal zone. The temperature is always a few degrees above freezing, and is unaffected by the weather at the surface. Animals feed on "marine snow": scraps of dead fish and plants from the upper layers, falling gently through the water column. The abyssal zone, which extends to twenty thousand feet, encompasses ninety-seven per cent of the ocean floor.

After two hours in free fall, the pilot entered the hadal zone, named for the Greek god of the underworld. It is made up of trenches—geological scars at the edges of the earth's tectonic plates—and although it composes only a tiny fraction of the ocean floor, it accounts for nearly fifty per cent of the depth.

Past twenty-seven thousand feet, the pilot had gone beyond the theoretical limit for any kind of fish. (Their cells collapse at greater depths.) After thirty-five thousand feet, he began releasing a series of weights, to slow his descent. Nearly seven miles of water was pressing on the titanium sphere. If there were any imperfections, it could instantly implode.

The submarine touched the silty bottom, and the pilot, a fifty-three-year-old

For more than a year, the team trying to

reach the deepest point in every ocean faced challenges as timeless as bad weather and as novel as the equipment they invented.

PHOTOGRAPHS BY PAOLO PELLEGRIN

Texan named Victor Vescovo, became the first living creature with blood and bones to reach the deepest point in the Tonga Trench. He was piloting the only submersible that can bring a human to that depth: his own.

For the next hour, he explored the featureless beige sediment, and tried to find and collect a rock sample. Then the lights flickered, and an alarm went off. Vescovo checked his systems—there was a catastrophic failure in battery one. Water had seeped into the electronics, bringing about a less welcome superlative: the deepest-ever artificial explosion was taking place a few feet from his head.

If there were oxygen at that depth, there could have been a raging fire. Instead, a battery junction box melted, burning a hole through its external shell without ever showing a flame. Any instinct to panic was suppressed by the impossibility of rescue. Vescovo would have to come up on his own.

Seven miles overhead, a white ship bobbed in Polynesian waters. It had been built by the U.S. Navy to hunt Soviet military submarines, and recently repurposed to transport and launch Vescovo's private one. There were a couple of dozen crew members on board, all of whom were hired by Vescovo. He was midway through an attempt to become the first person to reach the deepest point in each ocean, an expedition he called the Five Deeps. He had made a fortune in private equity, but he could not buy success in this—a richer man had tried and failed. When the idea first crossed his mind, there was no vehicle to rent, not even from a government. No scientist or military had the capacity to go within two miles of the depths he sought to visit. Geologists weren't even sure where he should dive.

Vescovo's crew was an unlikely assemblage—"a proper band of thieves," as the expedition's chief scientist put it—with backgrounds in logistics, engineering, academia, and petty crime. Some on board had spent decades at sea; others were landlubbers. For more than a year, they faced challenges as timeless as bad weather and as novel as the equipment they had invented for the job. They discovered undersea mountain ranges, collected thousands of biological samples that revealed scores of new species, and burned through tens of thousands of gallons of fuel and alcohol.

In 1969, when Vescovo was three years old, he climbed into the front seat of his mother's car, which was parked on a hill outside their house. He was small and blond, the precocious, blue-eyed grandson of Italian immigrants who had come to the United States in the late nineteenth century and made a life selling gelato in the South. Vescovo put the car in neutral. It rolled backward into a tree, and he spent the next six weeks in an intensive-care unit. There were lasting effects: nerve damage to his right hand, an interest in piloting complex vehicles, and the "torturous compulsion," he said, to experience everything he could before he died.

He grew up reading science fiction, and aspired to be an astronaut; he had the grades but not the eyesight. As an undergraduate, at Stanford, he learned to fly planes. Afterward, he went to M.I.T., for a master's degree in defense-and-arms-control studies, where he modelled decision-making and risk—interests that later converged in overlapping careers as a Reserve Naval Intelligence officer and a businessman. Vescovo was deployed as a targeting officer for the NATO bombing of Kosovo, and, as a counterterrorism officer, he was involved in a hostage rescue in the Philippines. He learned Arabic and became rich through finance and consulting jobs, and, later, through a private-equity firm, Insight Equity, in the suburbs of Dallas, where he lives.

Vescovo started going on increasingly elaborate mountaineering expeditions, and by 2014 he had skied the last hundred kilometres to the North and South Poles and summited the highest peak on every continent. He had narrowly survived a rock slide near the top of Mt. Aconcagua, in the Argentinean Andes, and had come to embrace a philosophy that centered on calculated risk. Control what you can; be aware of what you cannot. Death, at some point, is a given—"You have to accept it," he said—and he reasoned that the gravest risk a person could take was to waste time on earth, to reach the end without having maximally lived. "This is the only way to fight against mortality," he said. "My social life was pretty nonexistent, but it just wasn't a priority. Life was too interesting." He grew his hair down to his shoulders, and touched up the color, even as his beard turned white. On weekends, he used his private jet to shuttle rescue dogs to prospective owners all over the U.S. At sea, according to members of his expedition team, he spent hours in his cabin alone, playing Call of Duty and eating microwaved macaroni and cheese.

But every age of exploration runs its course. "When Shackleton sailed for the Antarctic in 1914, he could still be a hero. When he returned in 1917 he could not," Fergus Fleming writes, in his introduction to "South," Ernest Shackleton's diary. "The concept of heroism evaporated in the trenches of the First World War." While Shackleton was missing in Antarctica, a member of his expedition cabled for help. Winston Churchill responded, "When all the sick and wounded have been tended, when all their impoverished & broken hearted homes have been restored, when every hospital is gorged with money, & every charitable subscription is closed, then & not till then wd. I concern myself with these penguins."

A century later, adventurers tend to accumulate ever more meaningless firsts: a Snapchat from the top of Mt. Everest; in Antarctica, the fastest mile ever travelled on a pogo stick. But to open the oceans for exploration without limit—here was a meaningful record, Vescovo thought, perhaps the last on earth. In 1961, John F. Kennedy said that "knowledge of the oceans is more than a matter of curiosity. Our very survival may hinge upon it." Yet, in the following decades, the hadal trench nearest to the U.S. became a dumping ground for pharmaceutical waste.

In September, 2014, Vescovo sent an inquiry to Triton Submarines, a small manufacturer in Vero Beach, Florida. He noted that he was a jet and helicopter pilot familiar with the "procedure-driven piloting of complex craft," and outlined what became the Five Deeps Expedition.

Patrick Lahey, the president of Triton, took up scuba diving when he was thirteen years old, and discovered that he felt more at home underwater than he did on land. The muted silence, the slow, deep breaths—diving forced him into a kind of meditative state. "I love the feeling of weightlessness," he told me. "I love

Victor Vescovo made a fortune in private equity, but he couldn't buy success in this—a richer man had tried and failed.

moving around in three dimensions, instead of two." Lahey attended commercial diving school, to learn underwater welding and construction for dams, bridges, and oil-and-gas installations. "Just about anything you might do out of the water you could do underwater," he said. "You bolt things, you cut things, you weld things together, you move things, you recover things." Water conducts electricity, and sometimes, he added, "you can feel it fizzing in your teeth."

In 1983, when he was twenty-one, he carried out his first submarine dive, to fourteen hundred feet, to inspect an oil rig off the coast of Northern California. He was profoundly affected by the experience—to go deep one hour and surface the next, with "none of the punitive decompression," he said. By the time Vescovo contacted him, Lahey had piloted more than sixty submersibles on several thousand dives. An expedition leader who has worked with him for decades told me that he is, "without question, the best submarine pilot in the world."

Lahey co-founded Triton in 2007. The business model was to build private submersibles for billionaires, including a Russian oligarch and a member of a Middle Eastern royal family. (In the years leading up to the first order, Lahey used to be laughed at when he attended boat shows; now there are companies that build support vessels for yachts, to carry helicopters, submarines, and other expensive toys.) But his deeper aspiration was to make other people comprehend, as Herman Melville wrote, in "Moby-Dick," that in rivers and oceans we see "the image of the ungraspable phantom of life; and this is the key to it all." After a few dives, many of Lahey's clients started allowing their vehicles to be used for science and filming.

Vescovo didn't care if Lahey sent him to the bottom of the ocean in a windowless steel ball; he just wanted to get there. But Lahey declined to build anything that didn't have a passenger seat, for a scientist; a manipulator arm, for collecting samples; and viewports, so that the occupants could appreciate the sensation of submergence. Such features would complicate the build, possibly to the point of failure. But Lahey has a tendency to promise the reality he wants before he's sure how to deliver it. "It wasn't really a business decision," a Triton engineer told me. "He wanted to build this. Giving up was not an option." Lahey saw Vescovo's mission as a way to develop and test the world's first unlimited hadal exploration system—one that could then be replicated and improved, for scientists.

Vescovo flew to the Bahamas, and Lahey took him for a test dive in Triton's flagship submersible, which has three seats and is rated to a depth of thirty-three hundred feet. The third seat was occupied by an eccentric British man in his thirties, named John Ramsay, who didn't seem to enjoy the dive; he was preoccupied with what he didn't like about the submersible—which he had designed.

"I never really had a particular passion for submarines," Ramsay, who is Triton's chief submarine designer, told me. "I still don't, really." What he does love is that he gets to design every aspect of each machine, from the central frame to the elegant handle on the back of the hatch. Car manufacturers have entire teams design a seat or a fender, and then produce it at scale. But nearly every Triton submarine is unique; Ramsay determines

MAGNUM

"It sure looks like spring, but I'll check my hibernation app."

• •

how he wants things to be, and a dozen or so men in Florida start building.

Ramsay, who works out of a spare bedroom in the wilds of southwest England, has never read a book about submarines. "You would just end up totally tainted in the way you think," he said. "I just work out what it's got to do, and then come up with a solution to it." The success or the failure of Vescovo's mission would rest largely in his hands.

"If Victor dies, and it's your fault, you've got to kill yourself," he told his wife, Caroline.

"Would you, though?" she replied.

"Of course!"

A submariner thinks of space and materials in terms of pressure, buoyancy, and weight. Air rises, batteries sink; in order to achieve neutral buoyancy—the ability to remain suspended underwater, without rising or falling—each component must be offset against the others. The same is true of fish, which regulate their buoyancy through the inflation and deflation of swim bladders.

Ramsay's submarines typically center on a thick acrylic sphere, essentially a bubble; release it underwater and it will pop right up to the surface. But acrylic was not strong enough for Vescovo's submersible. At the bottom of the deepest trench, every square inch would have to hold back sixteen thousand pounds of water—an elephant standing on a stiletto heel.

Ramsay settled on titanium: malleable and resistant to corrosion, with a high ratio of strength to density. The pressure hull would weigh nearly eight thousand pounds. It would have to be counterbalanced by syntactic foam, a buoyant filler comprising millions of hollow glass spheres. For the submarine to stay upright, the foam would have to go above the hull, providing upward lift—like a hot-air balloon, for water. "As long as the heavy stuff hangs in balance below the buoyant stuff, the sub will always stay upright," Ramsay explained.

The hull required the forging of two slabs of titanium into perfect hemispheres. Only one facility in the world had a chamber that was sufficiently large and powerful to subject the hull to pressures equivalent to those found at full ocean depth: the Krylov State Research Center, in St. Petersburg, Russia. Lahey attended the pressure test. There was no backup hull; an implosion would end the project. "But it worked—it validated what we were doing," Lahey told me.

It was the middle of summer, 2018, in South Florida, and Triton's technicians were working fifteen hours a day, in a space with no air-conditioning. Lahey paced the workshop, sweating, trying to encourage his team. The men who were building the world's most advanced deep-diving submersible had not attended Stanford or M.I.T.; they were former car mechanics, scuba instructors, and underwater welders, hired for their work ethic and their practical experience. The shop foreman used to be a truck driver. The hydraulics expert had a bullet in his abdomen, from his days running cocaine out of Fort Lauderdale, in the eighties. One of the electricians honed his craft by stealing car radios, as a teenager. ("I was really good at it," he told me.) Lahey, for his part, said that he was named—and later exonerated—by the federal government as an unindicted co-conspirator in a narcotics-trafficking operation involving a Soviet military submarine and a Colombian cartel.

Every major component of Vescovo's submarine had to be developed from scratch. The oil-and-gas industry had established a supply chain of components that are pressure-rated to around six thousand metres—but that was only half the required depth. Before assembling the submarine, the Triton team spent months imploding parts in a pressure chamber, and sending feedback to the manufacturers. "You're solving problems that have never existed before, with parts that have never existed before, from venders who don't know how to make them," Ramsay said.

The rest of the expedition team was on a ship docked in the harbor at Vero Beach, waiting. Vescovo remained at home in Dallas, training on a simulator that Triton had rigged up in his garage. On Lahey's recommendation, he had hired Rob McCallum, an expedition leader and a co-founder of EYOS Expeditions, to inject realism into a project that might otherwise die a dream.

For every Vescovo who goes to the South Pole, there is a McCallum making sure he stays alive. (McCallum has been to Antarctica a hundred and twenty-eight times.) "I love it when clients come through the door and say, 'I've been told this is impossible, but what do you think?'" he said to me. "Well, I think you've just given away your negotiating position. Let's have a glass of wine and talk about it."

McCallum—who is trim but barrel-chested, with a soft voice and a Kiwi accent—grew up in the tropics of Papua

New Guinea, and became a polar guide. He is a trained medic, dive master, firefighter, aircraft pilot, and boat operator, a former New Zealand park ranger who has served as an adviser to the Norwegian Navy. He speaks three Neo-Melanesian languages, and can pilot a Zodiac boat standing up, in sixteen-foot waves. He is the subject of a "Modern Love" column, in the *Times*. ("My father warned me about guys like you," the author recalls telling him, before marrying him anyway.) McCallum and his associates have discovered several high-profile shipwrecks, including Australian and American warships and an Israeli military submarine. A few months ago, he showed me on his computer an object on a sonar scan, which he believes to be Amelia Earhart's plane.

Vescovo asked what McCallum required from him. "The first thing I need is for you to triple the budget," he replied. He also shot down several of Vescovo's proposals, from the antiquated (no alcohol or spouses on board) to the insane (installing fake torpedo tubes on the bow; bringing his dog to the deepest point on earth).

Five oceans, five deeps—a journey around the world and to both poles. McCallum explained that the expedition would have to be anchored by the polar dives. The likely dive spot in the Arctic Ocean is covered by ice for much of the year, but there is a two-week dive window, beginning in late August. The Antarctic, or Southern Ocean, dive could be done in February, the height of summer in that hemisphere. The team would have to avoid hurricane season in the Atlantic, and monsoon season in the Pacific, and otherwise remain flexible, for when things inevitably went wrong.

Lahey persuaded Vescovo to buy the U.S.N.S. Indomitable, a two-hundred-and-twenty-foot vessel that he had found at a drydock in Seattle. It was built as an intelligence-gathering ship, in 1985, and spent much of the next fifteen years prowling the world's oceans, towing an undersea listening device. "It was owned by the Navy but operated by civilians," McCallum told me. He winked. "I didn't say C.I.A.—I just said civilians." Vescovo renamed it the Pressure Drop, for a spaceship from the "Culture" series of science-fiction novels, by Iain M. Banks.

The Arctic-dive window was fast approaching, and it seemed unlikely that the submersible would be ready. "That's when Patrick Lahey's overflowing optimism went from being an incredible, endearing personality trait to being a huge issue," Stuart Buckle, the Pressure Drop's captain, said. "Every day, Patrick would say, 'Oh, yes, it'll be ready in one or two days.' And then two days pass, and he'd say, 'It'll be ready in two days.'"

The final step in building a submarine is to put it in a swimming pool or in the water at a marina. "You need to know how much it weighs and how much it displaces," Ramsay said, because the average density of the craft and its passengers must be equal to that of the water in which it is submerged. "You've only calculated the volume of each object through computer models, which can't possibly represent the actual thing, with all its tolerances. Things are a bit bigger, things are a bit smaller, cables are fatter."

But there was no time to do this before loading it onto the ship and setting off for sea trials, in the Bahamas. They left Florida without knowing how much the submarine displaced. "It had never even touched the water," Ramsay said. "It was just 'Right, off we go. Let's see if it works.'"

SEA TRIALS

"When people talk about sea trials, they always think about testing a ship or testing a sub," McCallum told me. "But, really, what you're doing is you're testing people. You are testing systems, processes, conditions, and teams."

Buckle, the captain, dropped anchor near Great Abaco Island, in the Bahamas, and immediately became alarmed by the Triton crew's cavalier approach to safety. He had grown up in the Scottish Highlands, and gone to sea when he was seventeen years old. "Me and my guys were trying to adjust from the oil-and-gas industry, where you need a signed bit of paper to do anything, and to go out on deck you have to have your overalls, hard hats, goggles, earmuffs, and gloves," Buckle said. "Whereas a lot of the Triton guys were used to walking around in shorts and flip-flops, like you watch on 'American Chopper.' They were grinding and drilling and using hydraulic awls, looking at it, sparks flying everywhere, not wearing safety glasses or anything. To them, if something catches fire, it's funny—it's not an issue."

Vescovo named the submarine the Limiting Factor, for another spaceship from the "Culture" series. It was secured to a custom-built cradle, which could be rolled backward on metal tracks, to lower the sub into the ocean from the aft deck of the ship. During launch operations, the Triton crew attached it to a hook that hung down from a crane, known as an A-frame, shaped like an enormous hydraulic swing set. Buckle had asked Vescovo to buy a larger A-frame—one that was "man-rated" by a certification agency, so that they could launch the submersible, which weighs around twenty-six thousand pounds, with the pilot inside and the hatch secured. But there was no time to install one. So the Triton crew lowered the empty submersible into the water, and the ship's crew, using a different crane, launched a Zodiac boat over the starboard side. McCallum climbed into the Zodiac, and drove the pilot to the sub as it was being towed behind the ship.

The ship had no means of tracking the submarine underwater. "Once he left the surface, I had no idea where he was," Buckle said. "All we had at that point was one range." Buckle could see, for example, that the Limiting Factor was five hundred metres away, but he didn't know in which direction. "As long as that number was getting bigger, that meant he wasn't surfacing directly under me," he said. "If it just kept getting smaller and smaller, I'm in trouble."

"The thing about driving a ship is that unless you know how to drive a ship you never see the bad stuff," McCallum told me. "It's only when the captain's going 'Christ, that was close!' that you go 'Really? Was it?'"

Other incidents were unambiguous. "I was seeing Triton guys bouncing up the ladders without holding the handrails, wanting to jump on top of things while they were still swinging from the crane," Buckle recalled. Ropes failed, deck equipment snapped under stress. "One of the big ratchet hooks blew off the top of the hangar, and missed Patrick's head by that much," McCallum said, holding his fingers a couple of inches apart. "Just missed him. And he wasn't wearing a helmet, so that would have killed him."

Lahey piloted the sub on its earliest dives—first to twenty metres, then fifty,

then a thousand. Electronic systems failed. The hatch leaked. Emergency lights malfunctioned, and drop weights got stuck. Pre-dive checklists labelled several switches "inoperable." Post-dive checklists noted critical components lost and fallen to the seafloor.

"In a sea trial, you're trying to break stuff—you're trying to work out where your weakest link is," McCallum said. "It's incredibly demoralizing. You never feel as if you're making any meaningful forward progress." Each morning, he delivered a pre-dive briefing to members of the ship and submarine crews. "Don't be disheartened by the long list of things that broke," he told them. "Rejoice, because those are things that are not going to fail in the Southern Ocean—and if they did fail in the Southern Ocean we'd be fucked."

On September 9, 2018, Patrick Lahey piloted the Limiting Factor to the bottom of the Abaco Canyon, more than three miles down. It was the ninth time that the submersible had been in the water. Everything worked. The next day, Lahey repeated the dive, with Vescovo as the lead pilot. When they reached the bottom, Vescovo turned on the control unit that directs the manipulator arm. Something wasn't right. He and Lahey glanced at each other. "Do you smell that?" Lahey asked.

"Yes."

There was a puff of smoke in the capsule. Vescovo and Lahey grabbed the "spare air"—scuba regulators, with two-minute compressed-air cannisters—so that they wouldn't pass out while preparing the emergency breathing apparatus. A circuit breaker tripped, automatically switching off the control unit for the manipulator arm, and the acrid smell dissipated. Lahey, who was training Vescovo to handle crises underwater, asked what they should do.

"Abort the dive?" Vescovo said.

"Yes." They were two hours from the surface.

Ramsay and Tom Blades, Triton's chief electrical designer, had devised numerous safety mechanisms. Most systems were duplicated, and ran on separate electrical circuits, in case one of the batteries failed. The thrusters could be ejected if they became entangled; so could the batteries, to drop weight and provide buoyancy. The five-hundred-and-fifty-pound surfacing weight was attached by an electromagnet, so that if the sub lost electricity it would immediately begin its ascent. There was also a dead-man switch: an alarm went off if the pilot failed to check in with the ship, and if he failed to acknowledge the alarm the weights would automatically drop.

"Whenever we had any significant failure of some kind, the only thing that mattered was why," Vescovo said. "If you can identify the problem, and fix it, what are you going to do? Give up? Come on. That didn't even cross my mind. Maybe other people get freaked out. I've heard of that happening. But if you're mountain climbing and you fall, are you not going to climb again? No. You learn from it, and keep going."

By the middle of September, the sea trials had given way to "advanced sea trials"—a euphemism to cover for the fact that nothing was working. The Arctic Ocean dive window had already passed. Buckle was especially concerned about the launch-and-recovery system. The cranes were inadequate, and poorly spaced. One of the support vessels, which had been selected by Triton, was eighteen years old, and its rubber perimeter was cracking from years of neglect in the Florida sun. "I was pretty pissed off at that point," Buckle told me. "I had put my guys in a difficult situation, because they were trying to compensate for structural issues that you couldn't really work around. You can only piss with the dick you've been given."

McCallum redesigned the expedition schedule to begin with the Puerto Rico Trench, in the Atlantic Ocean, in December, followed by Antarctica, in early February. The adjustment added cost but bought time.

When Alan Jamieson, the expedition's chief scientist, contacted Heather Stewart, a marine geologist with the British Geological Survey, and told her that Vescovo wanted to dive to the deepest point of each ocean, she replied that there was a problem: nobody knew where those points were.

Most maps showing the ocean floor in detail are commissioned by people looking to exploit it. The oil-and-gas and deep-sea-mining industries require extensive knowledge, and they pay for it. But, with a few exceptions, the characteristics of the deepest trenches are largely unknown. As recently as the nineteen-sixties, ocean depths were often estimated by throwing explosives over the side of a ship and measuring the time it took for the boom to echo back from the bottom.

It may appear as if the trenches are mapped—you can see them on Google Earth. But these images weren't generated by scanning the bottom of the ocean; they come from satellites scanning the top. The surface of the ocean is not even—it is shaped by the features beneath it. Trenches create mild surface depressions, while underwater mountain ranges raise the surface. The result is a vaguely correct reading—here is a trench!—with a ludicrous margin of error. Every pixel is about five hundred metres wide, and what lies below may be thousands of feet deeper or shallower than the satellite projects, and miles away from where it appears on the map.

Vescovo would have to buy a multibeam echo sounder, an advanced sonar mapping system, to determine precise depths and dive locations. He chose the Kongsberg EM-124, which would be housed in a massive gondola underneath the ship. No other system could so precisely map hadal depths. Vescovo's purchase was the very first—serial number 001.

That November, Buckle sailed the Pressure Drop to Curaçao, off the coast of Venezuela, to have the EM-124 and a new starboard crane installed. But there was still no time to order a man-rated A-frame—its purchase, delivery, and installation would require that they miss the Antarctic dive window, adding a year to the expedition. "He's a wealthy dude, but he's not like Paul Allen or Ray Dalio," Buckle said of Vescovo. "He hasn't got that kind of money. This is a huge commitment of his resources."

Stewart prepared a list of possible dive locations, which earned her a spot on the expedition. For others, participation was largely a matter of luck. Shane Eigler had started working at Triton the previous year, after Kelvin

Magee, the shop foreman, sent him a Facebook message asking if he'd like to build submarines. They had met in the two-thousands, after Eigler had saved up enough money by growing marijuana to pay for dive lessons. Magee was his instructor. Later, Eigler worked as a car mechanic. "Building submarines—this shit is exactly the same as cars, just different components," Eigler told me.

On December 14th, the Pressure Drop set off for the Puerto Rico Trench, from the port of San Juan. "Been feeling a little queasy ever since we got underway," Eigler wrote that night, in an e-mail to his wife. It was his first time at sea.

THE STARTING GUN

Vescovo and Lahey went for a test dive down to a thousand metres. It was Lahey's last chance to train Vescovo in the Limiting Factor before he would attempt an eight-thousand-metre dive, solo, to the bottom of the Puerto Rico Trench. A scientific goal for the expedition was to collect a rock sample from the bottom of each trench, so Lahey switched on the manipulator arm.

Seconds later, on the Pressure Drop, a transmission came up from below. "Control, this is L.F.," Lahey said. "We have lost the arm. It has fallen off."

It was December 17th. After surfacing, Vescovo and Lahey walked into McCallum's office, toward the stern of the ship. "Patrick was under immense pressure that would have crushed almost anybody else I know," McCallum said. "He had applied a huge amount of his team's intellectual capital to this project, at the expense of all other projects, and yet things were just not quite where they needed to be."

Vescovo called off the expedition. "I think I'm just going to write this whole thing off as bad debt," he said. The manipulator arm had cost three hundred and fifty thousand dollars, and there was no spare.

Lahey begged for more time. "Give my guys one more day," he said. Vescovo relented, and went up to his cabin. No one saw him for the next thirty-two hours. "The more time I spend with Victor, the more I think he is Vulcan in his decision-making but not in his emotions," Buckle told me. "He's one of those guys who has a veneer of calm, but then probably goes into his cabin and screams into his pillow after he's been told the fifth bit of bad news that day." (Vescovo denies screaming into his pillow.)

Lahey pulled his team into the submarine hangar. "Do you think you can fix this fucking thing?" he asked.

Blades noted that the loss of the manipulator arm had freed up an electrical junction box, creating an opportunity to fix nearly everything else that was wrong with the electronics. "Basically, Tom Blades hot-wired the sub," Lahey explained. "There was literally a jumper cable running through the pressure hull, tucked behind Victor's seat."

On December 19th, Vescovo climbed into the Limiting Factor and began his descent. "The control room was just packed, and you could cut the atmosphere with a knife the entire way down," Stewart told me. "Patrick was just in his chair, ear to the radio, just wringing sweat."

At 2:55 P.M., Victor Vescovo became the first person to reach the deepest point in the Atlantic Ocean, eight thousand three hundred and seventy-six metres. It was his first solo dive, and it was flawless.

That night, "Victor was wandering around, drinking out of a bottle of champagne," McCallum said. "It was the first time we'd seen Victor relax. It was the first time we'd seen Victor touch alcohol. And from that point we knew we were going to take this around the world."

"Puerto Rico was the starting gun," Vescovo told me. "The Southern Ocean was the forge."

THE FORGE

Waves are local—the brushing of the ocean by the wind. Swells roll for thousands of miles across open water, unaffected by the weather of the moment.

On January 24, 2019, the Pressure Drop set off from the port of Montevideo, Uruguay, to dive the South Sandwich Trench, the deepest point of the Southern Ocean. Buckle and his crew had loaded the ship with cold-weather gear, and provisions for more than a month. There was a five-thousand-mile journey ahead of them, and the ship could barely go nine knots.

"Captain, can I have a word?" Peter Coope, the chief engineer, asked. "Is this ship going to be O.K.?"

"Yes," Buckle replied. "Do you think I would invite on board all the people I like working with most in the world,

The Pressure Drop, anchored in the Svalbard archipelago. The least-known region of the seafloor lies under the Arctic Ocean.

and then sail us all to a certain death?"

But Buckle wasn't so sure. A year earlier, when he'd first walked up the gangplank, he wondered why Triton had chosen this ship. The Pressure Drop hadn't been in service in several years. The hull was watertight, but there were holes in the steel superstructure, and the shipyard had stripped every functional component. The steering system had been wired in reverse; turn one way and the ship went the other. "It's a classic case of people who have spent a lot of time on boats thinking they know boats," Buckle told me. "I've spent a lot of time on planes, but if Victor said, 'I want to buy a 747,' I wouldn't go up and say, 'Yes, that one is great—buy that one.' I'd get a pilot or a flight engineer to do it." Buckle's first officer recalled, "The ship was fucking breaking apart."

After the purchase, Buckle and a small crew of mostly Scottish sailors spent two months living near a dock yard in Louisiana, refitting and repairing the ship. "Stu took a huge risk—not only for himself but for all his officers," McCallum told me. "He handpicked the guys, pulled them off of very well-paying oil-and-gas jobs, and got them to follow him to bum-fuck nowhere." In the evenings, Buckle and his crew drank beer on the top deck, and tossed pizza slices to alligators in the bayou. The ship came with no manuals, no electrical charts. "It was just a soul-destroying, slow process," Buckle said.

Now Buckle was steering the Pressure Drop into the Southern Ocean, the site of the most reliably violent seas in the world. After a few nights, Erlend Currie, a sailor from the Orkney Islands, shoved a life jacket under the far side of his bunk, so that the mattress would form

The Limiting Factor is the only vehicle "that can get to the bottom of any ocean, anytime, anywhere," Rob McCallum said.

a U shape, and he wouldn't fall out.

"You get these nasty systems rolling through, with just little gaps between them," McCallum told me. McCallum has seen waves in the Southern Ocean crest above ninety feet. He had carefully mapped out a dive window, between gales, and brought on board an ice pilot and a doctor. "If something goes wrong, there's no port to go to, and there's no one to rescue you," he said.

Albatross trailed the ship for the first several days. Soon they disappeared and the crew began seeing whales and penguins. "Filled with trepidation, we steamed into the teeth of the area where, on the old maps, they used to write, 'Here Be Monsters,'" Vescovo told me.

On the forecastle deck, in the control room, a cheerful, brown-haired Texan named Cassie Bongiovanni sat before four large monitors, which had been bolted to the table. Bongiovanni, who is twenty-seven years old, was finishing a master's degree in ocean mapping at the University of New Hampshire when Rob McCallum called and said that he needed someone to run a multibeam sonar system for one and a half laps around the world. She graduated at sea while mapping Vescovo's dive location in the Puerto Rico Trench.

As the head sonar operator, Bongiovanni had to make perfect decisions based on imperfect information. "The sound is generated from the EM-124, housed inside the giant gondola under the ship," she said. "As it goes down, the width of each sound beam grows, so that in the deepest trenches we're only able to pick up one point every seventy-five metres or so." In these trenches, it takes at least seven seconds for sound to reach the bottom, and another seven

seconds to return. In that gap, the ship has moved forward, and has pitched and rolled atop the surface of the sea. Bongiovanni also had to account for readings of sound speed at each dive site, as it is affected by variations in temperature, salinity, and depth.

The purchase and installation of the EM-124 cost more than the ship itself, but its software was full of bugs. Each day, Bongiovanni oscillated between awe and frustration as she rebooted it, adjusted parameters, cleaned up noisy data, and sent e-mails to Kongsberg, the maker, to request software patches. The expedition wasn't merely the first to dive the South Sandwich Trench but the first to map it as well.

Buckle positioned the ship over the dive site. A Triton mechanic named Steve Chappell was assigned the role of "swimmer," meaning that he would balance atop the Limiting Factor as it was lowered into the water, and disconnect the towline before it went down. He wore a dry suit; polar waters can rapidly induce involuntary gasping and vertigo, and even talented swimmers can drown within two minutes. For a moment, he lay on a submarine bucking in the middle of the Southern Ocean, fumbling with wet ropes, fingers numb. Then a Zodiac picked him up and took him back to the Pressure Drop, where he warmed his hands by an exhaust vent. Vescovo started the pumps, and the Limiting Factor began its descent.

Dive protocols required that Vescovo check in with the surface every fifteen minutes and announce his depth and heading and the status of his life-support system. But, after forty-five hundred metres, the communications system failed. The ship could still receive Vescovo's transmissions, but Vescovo couldn't hear the replies.

Aphids and krill drifted past the viewports. It is customary to abort a dive thirty minutes after losing communications, but Vescovo knew that he might never have another chance to reach the bottom of the Southern Ocean, so he kept going. He liked the sensation of being truly alone. Sometimes, on the surface, he spoke of human nature as if it were something he had studied from the outside. Another hour passed before he reached the deepest point: seven thousand four hundred and thirty-three metres. The point had never been measured or named. He decided to call it the Factorian Deep.

That night, Alan Jamieson, the chief scientist, stood on the aft deck, waiting for biological samples to reach the surface. "Most marine science is gritty as fuck," he told me. "It's not just 'Look at the beautiful animal,' or 'Look at the mysteries of the deep.' It's all the weird vessels we end up on, the work of hauling things in and out of the water." Jamieson, a gruff, forty-two-year-old marine biologist, who grew up in the Scottish Lowlands, is a pioneer in the construction and use of hadal landers—large, unmanned contraptions with baited traps and cameras, dropped over the side of a ship. In the past two decades, he has carried out hundreds of lander deployments in the world's deep spots, and found evidence of fish and critters where none were thought to be. Now, as snow blew sideways in the darkness and the wind, he threw a grappling hook over the South Sandwich Trench and caught a lander thrashing in the waves.

There were five landers on board. Three were equipped with advanced tracking and communications gear, to lend navigational support to the sub underwater. The two others were Jamieson's—built with an aluminum frame, disposable weights, and a sapphire window for the camera, to withstand the pressure at depth. Before each dive, he tied a dead mackerel to a metal bar in front of the camera, to draw in hungry hadal fauna. Now, as he studied the footage, he discovered four new species of fish. Amphipods scuttled across the featureless sediment on the seafloor, and devoured the mackerel down to its bones. They are ancient, insect-like scavengers, whose bodies accommodate the water—floating organs in a waxy exoskeleton. Their cells have adapted to cope with high pressure, and "they've got this ridiculously stretchy gut, so they can eat about three times their body size," Jamieson explained. Marine biologists classify creatures in the hadal zone as "extremophiles."

The following night, one of Jamieson's landers was lost. "Usually, things come back up where you put them, but it just didn't," Buckle said. "We worked

out what the drift was, and we then sailed in that drift direction for another three or four hours, with all my guys on the bridge—searchlights, binoculars, everyone looking for it. And we just never found it."

The second one surfaced later that night. But during the recovery it was sucked under the pitching ship and went straight through the propeller. By now, there was a blizzard, and the ship was heaving in eighteen-foot waves. "I lost everything—just fucking everything—in one night," Jamieson said. Vescovo suggested naming the site of the lost landers the Bitter Deep.

The Pressure Drop set off east, past a thirty-mile-long iceberg, for Cape Town, South Africa, to stop for fuel and food. Bongiovanni left the sonar running, collecting data that would correct the depths and the locations of key geological features, whose prior measurements by satellites were off by as much as several miles. (Vescovo is making all of the ship's data available to Seabed2030, a collaborative project to map the world's oceans in the next ten years.) Meanwhile, Jamieson cobbled together a new lander out of aluminum scraps, spare electronics, and some ropes and buoys, and taught Erlend Currie, the sailor from the Orkney Islands, to bait it and set the release timer. Jamieson named the lander the Erlander, then he disembarked and set off for England, to spend time with his wife and children. It would take several weeks for the ship to reach its next port stop, in Perth, where the Triton crew would install a new manipulator arm.

At the time, the deepest point in the Indian Ocean was unknown. Most scientists believed that it was in the Java Trench, near Indonesia. But nobody had ever mapped the northern part of the Diamantina Fracture Zone, off the coast of Australia, and readings from satellites placed it within Java's margin of error.

The Pressure Drop spent three days over the Diamantina; Bongiovanni confirmed that it was, in fact, shallower than Java, and Currie dropped the Erlander as Jamieson had instructed. When it surfaced, around ten hours later—the trap filled with amphipods, including several new species—Currie became the first person to collect a biological sample from the Diamantina Fracture Zone.

PIRATES

The Java Trench lies in international waters, which begin twelve nautical miles from land. But the expedition's prospective dive sites fell within Indonesia's Exclusive Economic Zone; according to U.N. conventions, a country has special rights to the exploration and exploitation of marine resources, as far as two hundred nautical miles from the coast. McCallum had spent much of the previous year applying for permits and permissions; he dealt with fifty-seven government agencies, from more than a dozen countries, in order to plan the Five Deeps.

For several months, the Indonesian government ignored McCallum's inquiries. Then he was bounced among ten or more agencies, to which he sent briefing materials about the submersible, the ship, the crew, and the mission. Between the Atlantic and the Antarctic dives, Vescovo flew to Jakarta to deliver a lecture, and he offered to bring an Indonesian scientist to the bottom of the trench. But when the ship arrived in Bali McCallum still hadn't received permission to dive.

Officially, this meant that the team could not carry out any scientific work in the Java Trench. But the international law of the sea allows for the testing of equipment, and, after Java, the next set of dives, in the Pacific Ocean, would be the deepest of all. "So we tested the sub a few times," McCallum said, smiling. "We tested the landers, we tested the sonar—we tested everything."

The Java Trench is more than two thousand miles long, and the site of violent seismic activity. Surveys in the northern part show evidence of landslides, from the 2004 earthquake that triggered a tsunami with hundred-foot waves that killed a quarter of a million people across Southeast Asia. Farther south, satellites had detected two deep pools, several hundred miles apart. The Pressure Drop mapped both sites, and Bongiovanni discovered that, in fact, the deepest point was between them, in a small pool that had previously gone unnoticed. It may be a new rupture in the ocean floor.

Buckle positioned the Pressure Drop over the pool, and turned off the ship's tracking and communications equipment. McCallum hoisted a pirate flag. The climate was tropical, eighty-six degrees, the ocean calm, with slow, rolling swells and hardly a ripple on the surface. On the morning of April 5, 2019, the Triton crew launched the Limiting Factor without incident, and Vescovo dived to the deepest point in the Java Trench.

Mountaineers stand atop craggy peaks and look out on the world. Vescovo descended into blackness, and saw mostly sediment at the bottom. The lights on the Limiting Factor illuminated only a few feet forward; the acrylic viewports are convex and eight inches thick. Whatever the true topography of the rock underneath, hadal trenches appear soft and flat at the deep spots. Flip a mountain upside down and, with time, the inverted summit will be unreachable; for as long as there has been an ocean, the trenches have been the end points of falling particulate—volcanic dust, sand, pebbles, meteorites, and "the billions upon billions of tiny shells and skeletons, the limy or silicious remains of all the minute creatures that once lived in the upper waters," Rachel Carson wrote, in "The Sea Around Us," in 1951. "The sediments are a sort of epic poem of the earth."

Vescovo spent three hours at the bottom, and saw a plastic bag through the viewports. In the Puerto Rico Trench, one of the Limiting Factor's cameras had captured an image of a soda can. Scientists estimate that in thirty years the oceans will hold a greater mass of plastic than of fish. Almost every biological sample that Jamieson has dredged up from the hadal zone and tested in a lab has been contaminated with microplastics. "Does it harm the ability of these animals to feed, to maneuver, to reproduce?" McCallum said. "We don't know, because we can't compare one that's full of microplastics with one that's not. Because there aren't any."

The walls of trenches are filled with life, but they were not Vescovo's mission. "It's a little bit like going to the Louvre, putting your running shoes on, and

sprinting through it," Lahey said. "What you really want to do is to go there with someone who can tell you what you're looking at." The next day, Vescovo told Lahey that he could take Jamieson to the bottom of the trench. "I don't want to go to the deepest point, because that's boring," Jamieson said. "Let's go somewhere really cool."

Four and a half miles below the ship, the Australia tectonic plate was being slowly and violently subsumed by the Eurasia plate. Bongiovanni had noticed a staircase feature coming out of a fault line, the result of pressure and breakage on a geological scale. It extended more than eight hundred feet up, beyond vertical, with an overhang—an outrageously difficult dive. Lahey would have to back up as they ascended, with no clear view of what was above the sub.

The hatch started leaking during the descent, but Lahey told Jamieson to ignore it—it would seal with pressure. It kept dripping for more than ninety minutes, and stopped only at fifteen thousand feet. "I fucking told you it would seal," Lahey said.

The Limiting Factor arrived at the bottom just after noon. Lahey approached the fault-line wall, and headed toward some bulging black masses. From a distance, they looked to Jamieson like volcanic rock, but as Lahey drew closer more colors came into view—brilliant reds, oranges, yellows, and blues, cloaked in hadal darkness. Without the lights of the submarine, the colors may never have been seen, not even by creatures living among them. These were bacterial mats, deriving their energy from chemicals emanating from the planet's crust instead of from sunlight. It was through this process of chemosynthesis that, billions of years ago, when the earth was "one giant, fucked-up, steaming geological mass, being bombarded with meteorites," as Jamieson put it, the first complex cell crossed some intangible line that separates the non-living from the living.

Lahey began climbing the wall—up on the thrusters, then backward. Jamieson discovered a new species of snailfish, a long, gelatinous creature with soft fins, by looking through a viewport. The pressure eliminates the possibility of a swim bladder; the lack of food precludes the ossification of bones. Some snailfish have antifreeze proteins, to keep them running in the cold. "Biology is just smelly engineering," Jamieson said. "When you reverse-engineer a fish from the most extreme environments, and compare it to its shallow-water counterparts, you can see the trade-offs it has made."

The wall climb took an hour. When the last lander surfaced, Jamieson detached the camera and found that it had captured footage of a dumbo octopus at twenty-three thousand feet—the deepest ever recorded, by more than a mile.

The Pressure Drop set off toward the Pacific Ocean. McCallum lowered the pirate flag. Seven weeks later, Jamieson received a letter from the Indonesian government, saying that his research-permit application had been rejected, "due to national security consideration."

A DAILY FLIGHT TO THE MOON

Buckle sailed to Guam, with diversions for Bongiovanni to map the Yap and Palau Trenches. Several new passengers boarded, one of whom was unlike the rest: he had been where they were going, six decades before. Hadal exploration has historically prioritized superlatives, and an area of the Mariana Trench, known as the Challenger Deep, contains the deepest water on earth.

On January 23, 1960, two men climbed into a large pressure sphere, which was suspended below a forty-thousand-gallon tank of gasoline, for buoyancy. One of them was a Swiss hydronaut named Jacques Piccard, whose father, the hot-air balloonist Auguste Piccard, had designed it. The other was Don Walsh, a young lieutenant in the U.S. Navy, which had bought the vehicle, known as a bathyscaphe, and modified it to attempt a dive in the Challenger Deep.

The bathyscaphe was so large that it had to be towed behind a ship, and its buoyant gasoline tank was so delicate that the ship couldn't travel more than one or two miles per hour. To find the dive site, sailors tossed TNT over the side of the ship, and timed the echo reverberating up from the bottom of the trench. There was one viewport, the size of a coin. When the bathyscaphe hit the bottom, stirring up sediment, "it was like looking into a bowl of milk," Walsh said. A half century passed before anyone returned.

The bathyscaphe never again dived to hadal depths. Jacques Piccard died in 2008. Now Don Walsh, who was eighty-eight, walked up the gangway of the Pressure Drop. It was a short transit to the Mariana Trench, across warm Pacific waters, over six-foot swells.

Above the Challenger Deep, Vescovo pulled on a fire-retardant jumpsuit, and walked out to the aft deck. A gentle wind blew in from the east. Walsh shook Vescovo's hand. Vescovo climbed into the Limiting Factor, carrying an ice axe that he had brought to the summit of Mt. Everest.

Hatch secured, lift line down, tag lines released, towline out—pumps on. Vescovo wondered, Is the sub able to handle this? He didn't think it would implode, but would the electronics survive? The thrusters? The batteries? Besides Walsh and Piccard, the only other person to go to the bottom of the Challenger Deep was the filmmaker James Cameron, in 2012. Multiple systems failed at the bottom, and his submersible never dove deep again.

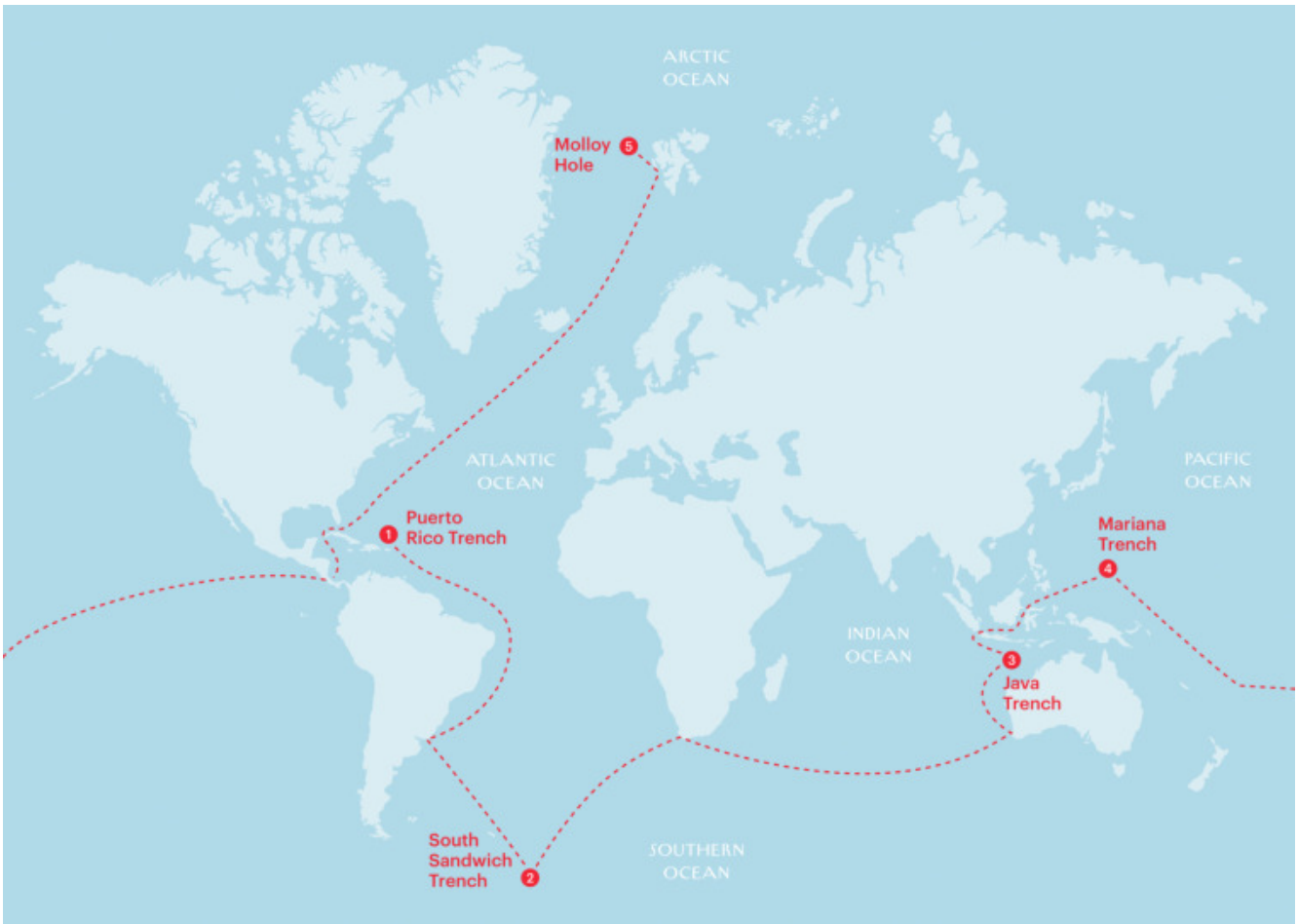
The depth gauge ticked past ten thousand nine hundred metres, thirty-six thousand feet. After four hours, Vescovo started dropping variable ballast weights, to slow his descent. At 12:37 P.M., he called up to the surface. His message took seven seconds to reach the Pressure Drop: "At bottom."

Outside the viewports, Vescovo saw amphipods and sea cucumbers. But he was two miles beyond the limits of fish. "At a certain point, the conditions are so intense that evolution runs out of options—there's not a lot of wiggle room," Jamieson said. "So a lot of the creatures down there start to look the same."

Vescovo switched off the lights and turned off the thrusters. He hovered in silence, a foot off the sediment bottom, drifting gently on a current, nearly thirty-six thousand feet below the surface.

That evening, on the Pressure Drop, Don Walsh shook his hand again. Vescovo noted that, according to the sonar scan, the submarine data, and the readings from the landers, he had gone deeper than anyone before. "Yeah, I cried myself to sleep last night," Walsh joked.

The Triton team took two maintenance days, to make sure they didn't miss anything. But the Limiting Factor was fine. So Vescovo went down again to retrieve a rock sample. He found



By the time the Pressure Drop reached the Arctic, it had completed one and a half laps around the world, to both poles.

some specimens by the northern wall of the trench, but they were too big to carry, so he tried to break off a piece by smashing them with the manipulator arm—to no avail. "I finally resorted to just burrowing the claw into the muck, and just blindly grabbing and seeing if anything came out," he said. No luck. He surfaced.

Hours later, Vescovo walked into the control room and learned that one of the navigation landers was stuck in the silt. He was in despair. The lander's batteries would soon drain, killing all communications and tracking—another expensive item lost on the ocean floor.

"Well, you do have a full-ocean-depth submersible" available to retrieve it, McCallum said. Lahey had been planning to make a descent with Jonathan Struwe, of the marine classification firm DNV-GL, to certify the Limiting Factor. Now it became a rescue mission.

When Lahey reached the bottom, he began moving in a triangular search pattern. Soon he spotted a faint light from the lander. He nudged it with the manipulator arm, freeing it from the mud. It shot up to the surface. Struwe—who was now one of only six people who had been to the bottom of the Challenger Deep—certified the Limiting Factor's "maximum permissible diving depth" as "unlimited."

The control room was mostly empty. "When Victor first went down, everyone was there, high-fiving and whooping and hollering," Buckle said. "And the next day, around lunchtime, everyone went 'Fuck this, I'll go for lunch.' Patrick retrieves a piece of equipment from the deepest point on earth, and it's just me, going, 'Yay, congratulations, Patrick.' No one seemed to notice how big a deal it is that they had already made this normal—even though it's not. It's the equivalent of having a daily flight to the moon." McCallum, in his pre-dive briefings, started listing "complacency" as a hazard.

Vescovo was elated when the lander reached the surface. "Do you know what this means?" McCallum said to him.

"Yeah, we got the three-hundred-thousand-dollar lander back," Vescovo said.

"Victor, you have the only vehicle in the world that can get to the bottom of any ocean, anytime, anywhere," McCallum said. The message sank in. Vescovo had read that the Chinese government has dropped acoustic surveillance devices in and around the Mariana Trench, apparently to spy on U.S. submarines leaving the naval base in Guam; he could damage them. A Soviet nuclear submarine sank in the nineteen-eighties, near the Norwegian coast. Russian and Norwegian scientists have sampled the water inside, and have found that it is highly contaminated. Now Vescovo began to worry that, before long, non-state actors might be able to retrieve and repurpose radioactive materials lying on the seafloor.

"I don't want to be a Bond villain," Vescovo told me. But he noted how easy it would be. "You could go around the world with this sub, and put devices on the bottom that are acoustically triggered to cut cables," he said. "And you short all the stock markets and buy gold,

ANUJ SHRESTHA

"He's anxious to resume perpetrating his usual activities."

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all at the same time. Theoretically, that is possible. Theoretically."

After a maintenance day, Lahey offered to take John Ramsay to the bottom of the trench. Ramsay was conflicted, but, he said, "there was this sentiment on board that if the designer doesn't dare get in it then nobody should dare get in it." He climbed in, and felt uncomfortable the entire way down. "It wasn't that I actually needed to have a shit, it was this irrational fear of what happens if I do need to have a shit," he said.

Two days later, Vescovo took Jamieson to the bottom of the Mariana Trench. They returned with one of the deepest rock samples ever collected, after Vescovo crashed into a boulder and a fragment landed in a battery tray.

Buckle started sailing back to Guam, to drop off Walsh, Vescovo, and the Triton crew. "It's quite mind-blowing, when you sit down and think about it, that, from the dawn of time until this Monday, there were three people who have been down there," he said. "Then, in the last ten days, we've put five more people down there, and it's not even a big deal."

It was early May, and there was only one ocean left. But the deepest point in the Arctic Ocean was covered by the polar ice cap, and would remain so for several months. The Pressure Drop headed south, toward Tonga, in the South Pacific. Bongiovanni kept the sonar running twenty-four hours a day, and Jamieson carried out the first-ever lander deployments in the San Cristobal and Santa Cruz Trenches. "The amphipod samples are mostly for genetic work, tracking adaptations," he told me. The same critters were showing up in trenches thousands of miles apart—but aren't found in shallower waters, elsewhere on the ocean floor. "How the fuck are they going from one to another?"

Bongiovanni mapped the Tonga Trench. The sonar image showed a forty-mile line of fault escarpments, a geological feature resulting from the fracturing of an oceanic plate. "It's horrendously violent, but it's happening over geological time," Jamieson explained. "As one of the plates is being pushed down, it's cracking into these ridges, and these ridges are fucking huge"—a mile and a half, vertical. "If they were on land, they'd be one of the wonders of the world. But, because they're buried under ten thousand metres of water, they just look like ripples in the ocean floor."

Bongiovanni routinely stayed up all night, debugging the new software and surveying dive sites, so that the Limiting Factor could be launched at dawn. "Day Forever," she dated one of her journal entries. "Sonar fucked itself." Now, before taking leave, she taught Erlend Currie, who had launched Jamieson's makeshift lander in the Diamantina Fracture Zone, how to operate the EM-124.

"When you give people more responsibility, they either crumble or they bloom, and he blooms," Buckle said. In the next month, Currie mapped some six thousand nautical miles of the ocean floor, from the Tonga Trench to the Panama Canal. "Erlend's doing a good job," another officer reported to Bongiovanni. "He's starting to really talk like a mapper. He just hasn't quite learned how to drink like one."

NORWEGIAN CANDY

I boarded the Pressure Drop in Bermuda, in the middle of July, seven months into the expedition. The crew had just completed another set of dives in the Puerto Rico Trench, to demonstrate the equipment to representatives of the U.S. Navy and to the billionaire and ocean conservationist Ray Dalio. (Dalio owns two Triton submarines.) Vescovo hoped to sell the hadal exploration system for forty-eight million dollars—slightly more than the total cost of the expedition. During one of the demonstrations, a guest engineer began outlining all the ways he would have done it differently. "O.K.," McCallum said, smiling. "But you didn't."

We set off north, through the turquoise waters of the Gulf Stream. It would take roughly three weeks, without stopping, to reach the deepest point in the Arctic Ocean. But the Arctic dive window wouldn't open for five more weeks, and, as Vescovo put it, "the Titanic is on the way." For several nights, I stood on the bow, leaning over the edge, mesmerized, as bioluminescent plankton flashed green upon contact with the ship. Above that, blackness, until the horizon, where the millions of stars began. Sometimes there was a crack of lightning in the distance, breaking through dark clouds. But most nights the shape of the Milky Way was so pronounced that in the course of the night you could trace the earth's rotation.

The air turned foggy and cold. Buckle steered out of the Gulf Stream and into the waters of the North Atlantic, a few hundred miles southeast of the port of St. John's, Newfoundland. After mid-

night, everyone gathered on the top deck and downed a shot of whiskey—a toast to the dead. We would reach the site of the Titanic by dawn. At sunrise, we tossed a wreath overboard, and watched it sink.

A few years ago, Peter Coope, Buckle's chief engineer, was working on a commercial vessel that was affixing an enormous, deepwater anchor to an oil rig off the coast of Indonesia. The chain slipped over the side, dragging down one side of the ship so far that the starboard propeller was in the air. Water poured into the engine room, where Coope worked. It was impossible for him to reach the exit.

British ship engineers wear purple stripes on their epaulets. Many of them think of this as a tribute to the engineers on the Titanic, every one of whom stayed in the engine room and went down with the ship. Now Coope, whose father was also a chief engineer, resolved to do the same. "I saw my life blowing away," Coope recalled. "People say it flashes in front of you. I was just calm. I felt, That's it—I've gone." The bridge crew managed to right the ship after he had already accepted his fate.

The next day, Vescovo piloted the Limiting Factor down to the Titanic, with Coope's epaulets, and those of his father, in the passenger seat. The debris field spans more than half a mile, and is filled with entanglement hazards—loose cables, an overhanging crow's nest, corroded structures primed to collapse. ("What a rusting heap of shit!" Lahey said. "I don't want the sub anywhere near that fucking thing!") Large rusticles flow out from the bow, showing the directions of undersea currents. Intact cabins have been taken over by corals, anemones, and fish.

That evening, Vescovo returned the epaulets, along with a photograph of him holding them at the site of the wreck. Coope, who is sixty-seven, had come out of retirement to join this expedition—his last.

The Pressure Drop continued northeast, past Greenland and Iceland, to a port in Svalbard, an Arctic archipelago about six hundred miles north of Norway. Huge glaciers fill the inlets, and where they have melted they have left behind flattop mountains and slopes, crushed and planed by the weight of the ice. Most of the archipelago is inaccessible, except by snowmobile or boat. The population of polar bears outnumbers that of people, and no one leaves town without a gun.

McCallum brought on board two EYOS colleagues, including a polar guide who could smell and identify the direction of a walrus from a moving ship, several miles away. By now, McCallum had adjusted the expedition schedule ninety-seven times. The Pressure Drop set off northwest, in the direction of the Molloy Hole, the site of the deepest point in the Arctic Ocean. The least-known region of the seafloor lies under the polar ice cap. But scientists have found the fossilized remains of tropical plants; in some past age, the climate was like that of Florida.

It was the height of Arctic summer, and bitterly cold. I stood on the bow, watching Arctic terns and fulmars play in the ship's draft, and puffins flutter spastically, barely smacking themselves out of the water.

The sun would not set, to disorienting effect. When I met John Ramsay, he explained, with some urgency, that the wider, flatter coffee cups contained a greater volumetric space than the taller, skinnier ones—and that this was an important consideration in weighing the consumption of caffeine against the potential social costs of pouring a second cup from the galley's single French press.

Ice drifted past; orcas and blue whales, too. Buckle sounded the horn as the ship crossed the eightieth parallel. One night, the horizon turned white, and the polar ice cap slowly came into view. Another night, the ice pilot parked the bow of the ship on an ice floe. The Pressure Drop had completed one and a half laps around the world, to both poles. The bow thruster filled the Arctic silence with a haunting, mechanical groan.

Bongiovanni and her sonar assistants had mapped almost seven hundred thousand square kilometres of the ocean floor, an area about the size of Texas, most of which had never been surveyed. Jamieson had carried out a hundred and three lander deployments, in every major hadal ecosystem. The landers had travelled a combined distance of almost eight hundred miles, vertically, and captured footage of around forty new species. Once, as we were drinking outside, I noticed a stray amphipod dangling from Jamieson's shoelace. "These little guys are all over the fucking planet," he said, kicking it off. "Shallower species don't have that kind of footprint. You're not going to see that with a zebra or a giraffe."

The earth is not a perfect sphere; it is smushed in at the poles. For this reason, Vescovo's journey to the bottom of the Molloy Hole would bring him nine miles closer to the earth's core than his dives in the Mariana Trench, even though the Molloy is only half the depth from the surface.

On August 29th, Vescovo put on his coveralls and walked out to the aft deck. The ship and submarine crews had so perfected the system of launch and recovery that, even in rough seas, to an outsider it was like watching an industrial ballet. The equipment had not changed since the expedition's calamitous beginnings—but the people had.

"This is not the end," Vescovo said, quoting Winston Churchill. "It is not even the beginning of the end. But it is, perhaps, the end of the beginning."

He climbed inside the Limiting Factor. The swimmer closed the hatch. Vescovo turned on the oxygen and the carbon-dioxide scrubbers. "Life support engaged," he said. "Good to go."

For the first few hundred feet, he saw jellyfish and krill. Then marine snow. Then nothing.

The Triton crew piled into the control room. Lahey found a box of licorice from Svalbard, took a bite, and passed it around. "Just fucking heinous," he said, grimacing. "Who the fuck makes candy like that? Tastes like frozen shit."

There was a blip on the communications system. For a moment, the room went silent, as Vescovo called in to report his heading and depth. Then Kelvin Magee, the shop foreman, walked into the control room.

"Try it, Kelvin, you bastard!" Lahey said. "It's from Svalbard. It's local. It's a fucking Norwegian candy."

"Get it while there's still some left!"

"It's that ammonium chloride that really makes it—and that pork gelatine," Buckle said.

"Pork genitals?"

McCallum stood quietly in the corner, smiling. "Look at these fucking misfits," he said. "They just changed the world." ♦

THE FEARLESS PIANIST

After streaming performances from his Berlin apartment, Igor Levit is asking what a concert can be.

By Alex Ross

On March 10th, the German pianist Igor Levit played Beethoven's Third and Fifth Piano Concertos at the Elbphilharmonie, the hulking concert complex in Hamburg. It was his thirty-third birthday and, it turned out, his last public concert for many weeks. The next day, Angela Merkel, the German Chancellor, delivered a dire warning about the scope of the looming coronavirus pandemic, and performance spaces began closing across the country. At the time, Levit had a full schedule before him. He had recently issued a boxed-set recording of Beethoven's thirty-two piano sonatas, and was playing Beethoven cycles in several European cities. He was also preparing to tackle an arcane colossus of the piano literature—the seventy-minute Piano Concerto by the early-twentieth-century composer-virtuoso Ferruccio Busoni, a hero of his.

"That next day, the eleventh, was kind of a shock day," Levit told me recently, in a video call from his apartment, in Berlin. "On the twelfth, I was shopping in a grocery store, and I had this thought: What if I live-streamed a gig?" He peered into his phone with a grin. He is a trim young man with sharp features, a high Mahlerian hairline, and a thin growth of beard. He was wearing a T-shirt that read "Love Music Hate Racism." He speaks rapidly and incisively, his English nearly as good as his German. Sometimes he seems more mature than his years, poised and oracular; at others, he comes across as an antic, restless member of his digital-native generation.

Levit went on, "When I got home, I did what I usually do, which is to throw a thought into the public arena without thinking about any consequences. I went on Twitter and said, 'O.K., I'm going to play for you guys tonight at my place.' After having tweeted that, I realized, Hang on—I've never streamed anything, I know shit about streaming, I don't even know if Twitter allows thirty minutes of streaming, I have no camera stand. I had a total panic. I was sending messages to friends: 'Do you know how streaming works?' And this tweet was already out there. It was a catastrophe. I ran to the last electronics store that was still open, and got some stuff for twenty-four euros."

I saw Levit's tweet and tuned in. The setting was familiar, because I had met with him there the previous summer. He lives in a spacious, airy, sparely decorated apartment in the Mitte neighborhood of Berlin, with plate-glass windows overlooking a park. His instrument is a 1923 Steinway B that once belonged to the great Swiss pianist Edwin Fischer. At 7 P.M., Levit pressed the Record button on his smartphone and trotted in front of his newly acquired home-Webcasting equipment, dressed casually in a black-and-gray pullover shirt and black pants. He gave a brief introduction, in German and English: "It's a sad time, it's a weird time, but acting is better than doing nothing. Let's bring the house concert into the twenty-first century." He then tore into Beethoven's "Waldstein" Sonata, in a fashion typical of him—precipitate, purposeful, intricately nuanced. It was an imposing structure aglow with feeling.

Other pianists of Levit's generation may have achieved wider mass-market fame—Lang Lang and Yuja Wang come first to mind—but none have comparable stature as a cultural or even a political figure. In German-speaking countries, Levit is a familiar face not only to classical-music fans but also to a broader population that shares his leftist, internationalist world view. He has appeared on mainstream German TV shows; participated in political panel discussions; and attended the annual gathering of the Green Party, playing Beethoven's "Ode to Joy," the anthem of the European Union. It was no surprise that Levit's inaugural live stream attracted attention, though I was taken aback when the number of viewers climbed into the tens of thousands.

In the following weeks, as Levit kept Webcasting each night, a convivial online community formed around him on Twitter and its Periscope app—a self-described "*Igor Familie*." Periscope includes a chat-room sidebar, with hearts floating up the screen like bubbles. Most comments were in German, but there were salutations from Nairobi, Tokyo, and Montevideo. Some viewers made musicological points—"New harmonic structures become transparent," one person wrote when Levit tackled Brahms's arrangement of the Bach Chaconne in D Minor—while others discussed the pianist's facial hair, T-shirts, and footwear. "Hard rock fan from Düsseldorf is thrilled," one commenter said. Levit delivered short talks, usually focussed on the music at hand. He never spoke at the end, though emotion sometimes surfaced. Once, halfway through Schubert's sublime Sonata in B-flat, he buried his head in his hands, hiding tears; he did the same after Morton Feldman's solitary, unearthly "Palais de Mari."

Levit's *Hauskonzerte* drew notice in high places. For the twenty-second night of the series, he was invited to perform in the concert room at Schloss Bellevue, the German Presidential residence. Frank-Walter Steinmeier, who holds the largely ceremonial office of President, provided an introduction, praising Levit not just for giving comfort but also for highlighting the fact that "many artists are in crisis—no performance opportunities, no concerts, no productions—and, because they are in crisis, they need our support." Levit, this time wearing a black jacket and dress shoes, again played the "Waldstein"—the only time in the series that

Concert pianists are often seen as unworldly souls who lose themselves in palaces of sound. Levit is emphatically not a loner.

ILLUSTRATION BY ANDREA VENTURA

he repeated a piece. When I asked Steinmeier's office for a comment about Levit, I received a statement extolling the pianist's "acute sense of the power of public life, community and solidarity." At a recent press conference, Steffen Seibert, the chief spokesperson for the Merkel government, made mention of "a pianist's famous house concerts"—undoubtedly meaning Levit, even if the name went unsaid.

On May 4th, Levit streamed his fifty-second concert—his last, for the time being. "I need to take a break and recalibrate," he told me. "I mean, I haven't read a book in four weeks." This phase of his career had been disorienting. He had gained even greater visibility, yet he was isolated in his apartment, fearful of what an extended shutdown will mean for cultural life. (He has had several girlfriends, but is currently unattached.) Levit went on, "I mean, one journalist said that I was creating 'fireplace moments for the nation.' For God's sake! All I wanted to do was to share something, *do* something, instead of just sitting in my apartment and watching everything crumble." One day, Levit sent me a text saying, "Maybe for the first time do I understand what it means to speak of music as something life-keeping. It really keeps me alive. . . . I don't care if it's wrong or right, whatever B.S. that means, just as long as I can actually press down the black and white keys. I've never, never been freer than now. Never. And I am in tears half the day. Very, very dark. And yet. The existential must of music-making really becomes bigger and bigger by the minute."

Concert pianists are often stereotyped as remote souls, apt to lose themselves in the palaces of sound they summon at the keyboard. Levit is emphatically not a loner. He has a global network of friends, and transmits countless e-mails, texts, emojis, and GIFs every day. He is a cultural omnivore who is as likely to quote from Kendrick Lamar or "Simpsons" episodes as from Kafka or James Baldwin. Outfitted in a hoodie, a T-shirt, and jeans, he blends in easily with other guys on the streets of Berlin. His moderately hip image arouses suspicion in conservative corners of the classical-music world. "Just shut up and play," he has heard people say, in several languages. From a more radical perch, the Berlin-based online magazine VAN has suggested that Levit is excessively self-dramatizing: "In the race for attention, Levit is a bit like Usain Bolt: he always seems effortlessly ahead."

The fixation on Levit's extramusical activities tends to overlook the fact that music is always churning through his mind, even when he seems preoccupied with other matters. As I met with him during the past year, I was most struck by his staggering command of centuries of repertory, whether or not a work is written for his instrument. Rehearsing Beethoven's "Les Adieux" before a recital, he noticed that one passage resembled a phrase in Wagner's "Götterdämmerung," and began playing the opera from memory. Another time, he tried out a piano piece by the nineteenth-century French maverick Charles-Valentin Alkan, then segued into a sonorous approximation of the Adagio of Bruckner's Sixth Symphony. He is just as prone to break into Henry Mancini, Nina Simone, or the Fred Hersch arrangement of Billy Joel's "And So It Goes." He is a completely musical animal, albeit an alert and worldly one.

Levit was born in Nizhny Novgorod, Russia, in 1987, and moved to Germany with his family when he was eight. His father, Simon, is a construction engineer; his mother, Elena, is a pianist and a pedagogue, specializing in children's musical education. The family is Jewish, though not particularly religious. "My parents simply wanted a better life—a better education for my sister and for myself, a better perspective for themselves," Levit told me. They settled in Hannover, the capital of the state of Lower Saxony.

He has few memories of Russia. "My first encounter with Germany and the German language was, in a way, so emotional, so enthusiastic, that everything before that disappeared," Levit told me. "I said that I was going to learn to speak better German than any of my classmates. I speak Russian with my parents. But when I went back to Russia recently—for the first time in seventeen years—it felt very touristy."

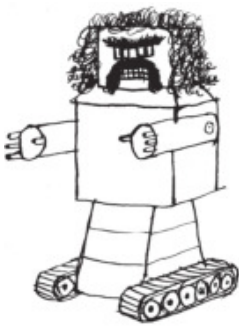
Germans love to debate the question "What is German?" In 2017, the scholar Dieter Borchmeyer published a best-selling thousand-page book with that title, arguing that German culture hangs in perpetual tension between expansively cosmopolitan and strictly nationalist definitions of identity. Levit firmly belongs to the cosmopolitan camp. On his Web site, he describes himself as "Cit-

izen. European. Pianist." Not until his early twenties did he feel his right to Germanness questioned. At an upper-crust dinner following a concert, he was shocked when a middle-aged lawyer said to him, "You must never forget that although you grew up in Germany and live in Germany, you belong to a population group that was intended not to live here anymore." Levit was being told, in shockingly racist terms, that some people would always see him as an interloper. He knew then that the old ghosts of German hyper-nationalism and anti-Semitism could rise again, as indeed they have.

Levit began playing piano at the age of three, under his mother's tutelage, and made his début a year later, with Beethoven's "Ecossaise in G." By his early teens, he was playing the Grieg Piano Concerto and other entry-level virtuoso fare. More atypically, he made a piano transcription of Beethoven's "Missa Solemnis." He did not, however, become a touring prodigy after the fashion of Lang Lang, or, in a previous generation, Evgeny Kissin. After earning second prize at the Arthur Rubinstein International Piano Master Competition in Tel Aviv, in 2005, he returned to his studies at the Hochschule für Musik und Theater, in Hannover. His mother has long taught there; he recently joined the faculty, which means that he can visit his family more often.

This relatively slow start allowed Levit to develop away from the spotlight, trying out repertory without facing outsized expectations. He also underwent a socialization process that many prodigies forgo. He was, in some ways, a normal high schooler, and, along with many of his German peers, developed a taste for American hip-hop. "I went around with my Walkman and pretty much knew every line of Eminem," he said. "Black Star was also very big for me. My first real experience of under-the-skin politicization was this fearless, borderless storytelling about yourself." A little later, he fell in love with the music of Thelonious Monk. "For the longest time, I wanted to *be* Monk, which was, of course, absurd, but it had a big, big influence on how I play the piano. That naked sound—no, not naked, but exposed, skeleton-like, oppositional. That is also Beethoven, for me."

Some of Levit's teachers discouraged his voracious musical appetites, but at the Hochschule he was fortunate to receive instruction from the Finnish pianist Matti Raekallio, who let him roam free. Raekallio, who now teaches at Juilliard, told me that having Levit as a student was like winning the lottery: "The so-called lessons with him were not really lessons, since there was nothing one could teach him about piano playing. Instead, they were conversations—about music, about life, about everything. I had never encountered such a natural curiosity, in which he had devoured everything and then wanted to know more." Levit has a formidable technique, although maintaining it is not effortless. "Octaves are not really my friends," he told me after a performance of the Brahms Second Concerto in Vienna, shaking his hands at his sides. He asserts himself through his grasp of musical architecture, his differentiation of moods, his urgency of expression. These qualities make him a superlative interpreter of Beethoven, whose power is always cumulative in effect.



Raekallio also led Levit toward the grand eccentrics in the piano firmament: the likes of Alkan, Busoni, Kaikhosru Sorabji, and Ronald Stevenson. The last two are twentieth-century British cult figures who specialized in scores of delirious complexity. As Levit explored this esoteric terrain, he developed an intense regard for the man who perhaps knows it better than anyone alive—the august Canadian pianist Marc-André Hamelin. "When I was a student, my single greatest hero was Marc," Levit says. "Everything he recorded I had to learn. Now we are good friends, and sometimes play together."

When Levit was sixteen, he came across Hamelin's recording of "The People United Will Never Be Defeated!," an hour-long work from 1975 by the radical-minded American composer Frederic Rzewski. By turns convulsively modernistic and brashly neo-Romantic, it consists of thirty-six variations on Sergio Ortega's "El Pueblo Unido Jamás Será Vencido," which became famous as a song of protest against the Chilean military dictatorship. Levit, whose commitment to leftist politics was deepening, found Rzewski's e-mail address on the Internet and wrote him a fan letter. "And then, because I was sixteen, or whatever, I asked him if he would write a piece for me." To Levit's surprise, Rzewski responded that he would write something, for money. After persuading a local new-music group to pay for the commission, Levit became the dedicatee of the second book of Rzewski's "Nanosonatas"—music of nervous brilliance that matched the pianist's emerging personality.

An unlikely friendship developed between the accomplished young German and the legendarily contrarian older American, who has long railed against the mainstream classical-music business. In 2015, Levit played "The People United" at Wigmore Hall, the venerable London chamber-music venue, where Beethoven string quartets and Schubert piano sonatas are the more usual fare. Rzewski was in the audience, and afterward he went onstage to congratulate Levit. "He leaned in to hug me and rasped in my ear, 'You're a real motherfucker,' " Levit recalled. "I wasn't sure how to take that at first. Eventually, I decided that it was the single greatest compliment I've ever received."

Levit introduced himself to the international public in an ostensibly conventional manner, with a recording of Beethoven. The Sony Classical label signed him in 2012, after he had attracted notice as a member of the BBC's young-artist program. His first Sony project was nonetheless bold in concept, even brazen: where other début pianists might have stuck to the "Moonlight," the "Appassionata," or the "Waldstein," Levit offered a two-disk set of Beethoven's final five piano sonatas, including the titanic "Hammerklavier."

To some, the gesture smacked of arrogance. He told me, "I know there is this attitude that you are supposed to wait until you are sixty-five and have seen life and the world and suffering before you approach late Beethoven. But I know thirteen-year-olds who

know a level of suffering that these full-of-themselves, elegant mid-sixties artists have absolutely no fucking idea about. Give me a break! Anyway, that's where I started, with late Beethoven. Matti really helped give me that attitude. He would say, 'Just go do it. Just be a pianist. I will help you not to be an idiot.'"

When that début recording arrived in the mail, I rolled my eyes, but skepticism soon gave way to wonder. The opening gestures of Opus 111, in C Minor, were almost frightening in their intensity; the inward-searching lyricism of the second movement suggested a sage elder who could remember the world before the wars. When Levit traversed the entire cycle for Sony, in sessions extending from 2017 to 2019, he considered rerecording the late sonatas, but decided that his earlier attempts held up. A sleight of hand happens as you make your way through the set: Beethoven gets older while Levit gets younger.

In 2014, Levit made his North American début with an all-Beethoven program at the Park Avenue Armory. Surpassing even the assurance of his recordings, he proved to be no fluke of the studio. At the same time, I thought that his playing tended toward extremes. Between the heaven-storming uptempo passages and the cosmic cantilenas, I yearned for a little more wit and whimsy. The good news of the Sony set is that it has these qualities in profusion, especially in the less celebrated corners of the canon. In the Andante of Opus 14, No. 2—a sequence of subtly playful variations on a somewhat drab theme—Levit teases out understated comedy in unexpected variations of dynamics, with a perfectly executed fortissimo punch line. In the first movement of Opus 78, he finds an easy-flowing, Schubertian songfulness in the main theme, which then gives way to mercurial shifts in mood.

Having established himself as an authoritative Beethovenian, Levit looked both backward and forward. In 2014, he released a recording of the Bach Partitas; the following year, he issued a three-disk set of three gigantic variation sequences: Bach's Goldbergs, Beethoven's Diabellis, and Rzewski's "People United." That effort led to a collaboration with the performance artist Marina Abramović, whom Levit met through the impresario Alex Poots, who was in charge of the Park Avenue Armory at the time. Levit found himself playing the Goldbergs while drifting across the vast Armory space on a rotating platform. He enjoyed the carnivalesque atmosphere that Abramović brought in her wake. Although he is generally indifferent to celebrity names of the American type—when I mentioned David Geffen Hall, he asked, "There is a Mr. Geffen?"—he was dazzled when Abramović showed up backstage with

OUR DAYS

1

In Chuck's dream, a strange woman
is smoking in our kitchen.

She's doing her best, she says,
exhaling into the oven.

Then three military men
burst in without knocking.

They say they've come
to establish order,

but their uniforms are strange.
Chuck suspects they're really salesmen.

Their leader stands too close
as he begins his pitch—

close enough to spread a virus.

2

I take a photo of a house
painted half blue, half pink.

Why am I drawn
to things that make no sense?

Or is their sense excessive?

You need to decontextualize
an object
in order to see it,

I once said.

Last sloth
in a pocket of rain forest;

exquisite scent
of hyacinth

wafted
on the wingless breeze.

—Rae Armantrout

Monica Lewinsky. He told me, his eyes still wide in amazement, that Lewinsky was "gorgeous, smart, clever, focussed—the nicest human being."

Perhaps the most remarkable of Levit's recordings is a two-disk album titled "Life," which came out in 2018. It was a memorial to the German artist Hannes Malte Mahler, who died in a bicycle accident in 2016. The two men had met in 2011 and immediately became close friends. "Hannes came from a world very different from mine, this wild world of contemporary art," Levit told me. "Accidentally or not, he always gave me the feeling that I am allowed to be who I am, without explaining or apologizing. I can just be." Mahler's death left Levit in a state of prolonged shock. "Aside from the loss, I had this sense that I had to go on even more with that process of taking away layers, discarding fears, letting myself be who I am. I really turned into a different person. No more bullshit." A painting of Mahler's, showing a gray village street with a gladiolus suspended above it, hangs next to Levit's piano.

In honor of his friend, Levit fashioned for his disk a centuries-spanning montage of styles, eras, and genres: adaptations of Bach by Brahms and Busoni, Liszt's elaborations on Wagner and Meyerbeer, a Rzewski work called "A Mensch," Bill Evans's "Peace Piece." Most of these scores involve one composer responding to another—a suitable memorial for a friendship between artists. This idiosyncratic project made Levit even more of an outlier among pianists of his generation—a swerve from the conventional path of carefully curated concert tours, recordings, and media appearances. Many an agent would have discouraged such an undertaking, but Kristin Schuster, who has managed Levit's career since 2013, supported him, as did Sony Classical. "They were fantastic," he says. "They knew there was this grizzly-bear-like energy in me, and it had to run its course."

Rebellious gestures notwithstanding, Levit remains a disciplined artist. He is not the kind of interpreter who draws attention to himself with outlandish gestures. Sometimes he wonders whether he could do something more radical. Last summer, I joined him as he travelled from Berlin to Zurich and on to Lucerne, where he was playing a Beethoven recital. During a late-night ride from the airport, he asked me if I knew Rzewski's 1991 live recording of the "Hammerklavier." I didn't, and within seconds he had summoned up a video of the performance on his iPad. "You will notice that it says one hour, six minutes, fifty-two seconds," he said. "Usually, the 'Hammerklavier' takes around forty-five minutes. So, why is this? Does he play it very slowly? No! He plays several long cadenzas." Levit slid his finger along the timing bar until he found a representative stretch—a keyboard-spanning, avant-Romantic fantasia on the sonata's thunderous opening motif.

Levit shook his head in awe as light from the computer danced against the lenses of his glasses. "Now, *this* is someone who has total freedom," he said. "And it's probably a very good approximation of what Beethoven himself sounded like, because everyone said that his improvisations were far crazier than whatever he wrote down. But, you know, only Frederic gets to do that. I have no idea how I'd go about doing such a thing. Improvisation is a systematic art you must study for a long time."

He fell silent for a moment. "Oh, and let me show you this," he said, browsing on his iPad again. "Here!" It was a scene from "The Simpsons," in which Homer says, "I have three kids and no money. Why can't I have no kids and three money?"

I looked puzzled, and he laughed. "O.K., yes, that has nothing do with the 'Hammerklavier.' I just think it's funny. 'Three money'!"

When I next saw Levit, in early December, his mood had changed. He was in Hamburg, at the outset of a brief tour with the Deutsche Kammerphilharmonie Bremen, playing Brahms's two piano concertos on separate nights. His manner was uncharacteristically furtive. "Things are strange," he told me, backstage at the Elbphilharmonie, where the concert was taking place. "These last couple of weeks, they have been very strange." I waited expectantly. "Very, very strange. We will discuss later."

Levit went into his dressing room to take a phone call while the orchestra gathered onstage to rehearse. Paavo Järvi, the Kammerphilharmonie's longtime music director, stepped to the podium and looked around. "Where is Igor?" he asked. He shrugged, smiled, and gave the downbeat for the grandly ominous orchestral introduction of Brahms's Concerto in D Minor: a fortissimo D in the horns, double-basses, violas, and timpani. I sent a text to Levit: "Your concerto is starting." After a minute or two, he appeared through the side door and bounded toward the piano, waving his arms in a birdlike motion, as if riding the waves of the music. He arrived on the bench twenty or so seconds before the piano's stealthy, pensive entrance. The orchestra, apparently accustomed to such behavior, took no notice.

After the rehearsal, in Levit's dressing room, he told me what had been going on. A few weeks earlier, he had appeared on a political talk show hosted by the German journalist Maybrit Illner, and participated in a discussion of hate speech. The panel also included Ralf Schuler, an editor from the right-wing tabloid *Bild*. Schuler, attempting to show that hate could inflame the left as well as the right, brought up a tweet that the pianist had posted in 2015, at the time of the refugee crisis in Germany. Levit had written that members of the right-wing Alternative für Deutschland Party, who had waged hate campaigns against the refugees, had "forfeited their humanity"—their *Menschsein*. Wasn't the tweet itself dehumanizing? Levit responded by saying that he had been brought up to understand the word *Mensch* in its Yiddish sense: "A *Mensch* is a person of honor." On that basis, he remained secure in his belief that the extremists lacked humanity, and he took nothing back.

Schuler's remarks brought Levit to the attention of people on the far right, who began attacking him publicly and privately. He was called *Judensau*, a Jewish pig, and within a couple of weeks he had received three death threats—two on e-mail, one on Instagram. The messages, which Levit shared with the police, mentioned two forthcoming events on his schedule: a concert in early December and one in January. The first of these dates was in Wiesbaden—the night after the concert I was about to see at the Elbphilharmonie. But some ambiguous wording in the threat made

it seem possible that tonight could be the target.

Levit paced his dressing room and made himself an espresso. "To hell with these people," he said. "It doesn't produce fear, it produces a certain kind of anger, like, a *real* anger. And it produces a very energizing feeling of 'O.K., you try me, you will get more.' I don't want to overprize myself: other people, especially women, receive this kind of thing on a daily basis. But it does make me very intensely consider who I want to be—what kind of, let's say, *citoyen* I want to be. I am a musician, but I am who I am. I think about becoming not only louder but deepening my actions. I don't know yet what that would be. It's a very interesting time." Levit told me that he has no interest in entering politics, although it is obvious that the field fascinates him.

I went to my seat in the hall while Levit put on his concert dress. Thirty minutes later, he was launching into the Brahms. I felt an unease I had never experienced before in a concert hall. Looking around, I wondered whether an attack was actually possible, and whether Levit's performance had acquired some extra edge of anger and defiance. It was difficult to say, since the first movement of the D-Minor Concerto is angry and defiant from the start. In the second movement, though, dire thoughts receded. The piano part of the Adagio begins with a passage marked "*molto dolce espressivo*," or "very sweet and expressive." It is music of almost vertiginous loveliness and loneliness—a lullaby remembered in grief. Levit is never more impressive than when he loses himself in such lyric idylls.

Afterward, I asked Levit what he had felt onstage. He said, "Honestly? Once the music started, I did not think about it. For me, the stage becomes the one place of freedom, absolute freedom. Nobody is bothering me, there are no phone calls, no interruptions. The worst thing that can happen, the worst thing possible, is a wrong note. Also, to hell with those people."

The police had asked Levit to avoid talking about the threats until after the Hamburg and Wiesbaden concerts. In late December, he published an essay on the subject, which appeared in the Berlin newspaper *Der Tagesspiegel*. "Was I afraid?" he wrote. "Yes, but not for myself." He linked his experiences to more serious instances of physical and verbal violence in Germany: a 2017 knife attack on Andreas Hollstein, the mayor of Altena; the 2019 assassination of the Hessian politician Walter Lübcke, who supported Merkel's open-door policy toward refugees; the 2019 resignation of Martina Angermann, the mayor of Arnsdorf, in the wake of incessant online harassment. This trend of violence could be connected to the spread of hate speech online: "First the speech, then the deed."

Levit defended his stance as an engaged musician—his refusal to "shut up and play." Music has astonishing powers of communication, he wrote, but it cannot name things: "To be free requires employing your own senses. To hear, to see, to feel, to smell. Music allows us to feel this kind of freedom. But music is not a substitute, it cannot be a substitute. Not for truth, not for politics, not for human understanding and sympathy. It cannot be a substitute for calling racism racism. It cannot be a substitute for calling misogyny misogyny. It can never be a substitute for being a wakeful, critical, loving, living, and active citizen."

Smoldering beneath this essay was an undiminished fury over the odious remark that had been made to Levit at that dinner years ago—the insinuation that, as a Jew, he could never overcome his outsider status. He likes to quote James Baldwin: "I love America more than any other country in the world,

and, exactly for this reason, I insist on the right to criticize her perpetually." For Levit, America is Germany.

The main event of Levit's spring season was to have been a string of performances of Busoni's immense, immoderate Piano Concerto, which requires not only a hypervirtuosic pianist but also a male chorus. The work is at once a transcendent example of the Romantic concerto and a diabolically entertaining satire of the genre—a self-conscious exhibition of excess. Levit played it once when he was eighteen, with the Göttingen Symphony. For years, he had been plotting his way back to it, and, with the assistance of the English-Italian conductor Antonio Pappano, had finally conquered the logistical obstacles. The first performance had been slated for April 2nd, in Rome, with the Orchestra and Chorus of the Academy of Santa Cecilia. It was cancelled as coronavirus deaths in Italy escalated into the thousands.

I had planned to attend the Rome performance; there is no concerto in or outside the repertory that I love more. During a video call in April, I asked Levit to talk about the piece, mainly because I wanted to hear it. After placing a pair of aubergines in the oven, he propped his phone on the piano and launched into the second movement, "*Pezzo giocoso*." The piano begins with rapid-fire runs and scalar patterns that are all the more fiendishly difficult for being muted in dynamics and delicate in articulation. The orchestra bursts in with a galumphing passage marked "*giovanescamente*"—"youthfully." Levit mimed it by chanting the dotted rhythm and waving his fists in the air. "Some passages in this movement are difficult to the point of total insanity," he said, plunging into a finger-entangling run of thirds and sixths. "Once you get past those, you are in the clear. The piece gets wilder and wilder, but also easier, more pianistic. The ending is bananas."

He attacked the keyboard again, bobbing his head like a hard-rock guitarist. Then he broke off and looked down. "It kills me not to be playing it," he said. "Six months of work—gone." He retrieved the aubergines from the oven and took a bite. A moment later, he was grinning again. "Oh, I have to show you this." He paged through his score, found a passage in the second movement, and held it up to the phone. It was a swirl of scalar runs, next to which the word "SEX" had been scrawled, underlined twice. "That is me at age eighteen. I can't explain it. There is nothing at all sexy on this page. Maybe it was some other kind of memo to myself."

Busoni lingers on the edges of the

repertory but looms large in late-nineteenth and early-twentieth-century musical history. An Italian who settled in Berlin, an archetype of German cosmopolitanism, Busoni played many roles in the culture of his time: as a composer of multiple styles and selves; as a pianist of mesmerizing powers; as a visionary theoretician; as a polemicist against reactionary trends; and as the guru for a circle of pupils that included Kurt Weill and Edgard Varèse. Matti Raekallio told me, "Busoni showed what the artist can be and should be: composer, performer, artist, citizen. This is something Igor also embodies. Playing the piano is just one way of expressing himself. There is more at stake than just getting the notes right."

That expansive conception of the performer's role guided Levit's quarantine concert series. Early on, he favored familiar fare, particularly Beethoven, but as the weeks went by he grew more adventurous. "My days as the healer of the nation are numbered," he joked to me in early April. Shortly afterward, he offered a suite of pieces on hard-left themes: Paul Dessau's "Guernica" (1938), inspired by Picasso's anti-Fascist painting of the previous year; Rzewski's "Which Side Are You On?," based on the mine workers' song made famous by Pete Seeger; and Cornelius Cardew's "Thälmann Variations" (1974), named for Ernst Thälmann, a German Communist leader who was murdered by the Nazis. Another night, he essayed Ronald Stevenson's "Passacaglia on DSCH" (1960–63), which declares solidarity with Communist ideals and has a passage marked "with a quasi-Gagarinesque sense of space." Levit highlighted such political contexts in his remarks at the piano. When he mentioned violence against immigrants in modern Germany, a troll surfaced in the Periscope chat room, and was chased away.

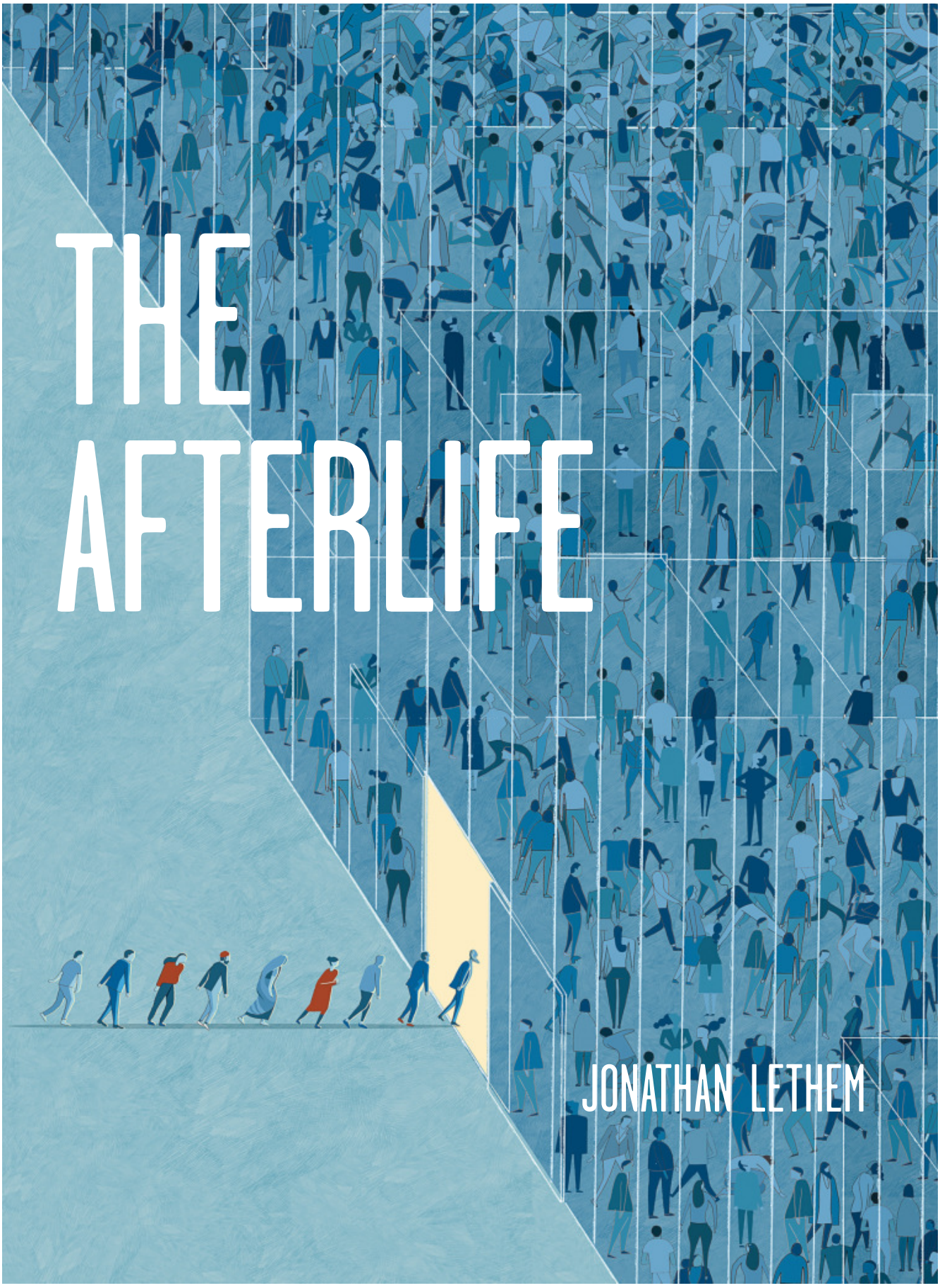
During our Busoni chat, Levit mused on what his *Hauskonzerte* might mean for his future career. "Stevenson's 'Passacaglia' is second to none," he told me. "It encompasses the entire world—African drums, Scottish bagpipes, outer space, everything. But, most of the time, if I told a concert hall I wanted to play it there'd be a polite silence. Here at home, if I feel like doing it, I do it. And, lo and behold, people are interested." He checked the archived video. "Twenty-six thousand people have listened to the Stevenson. Some were there only for a few minutes, I know, but it proves something." (One appreciative listener had posted, "Without this concert my horizons would be smaller.") If Levit were giving concerts now, he would be playing programs that he had agreed to back in 2017 or 2018. At home, he could choose whatever pieces fit his mood an hour before he turned on his camera. That sense of urgency was especially strong in Stevenson's "Passacaglia," in a seething account of Busoni's "Fantasia Contrappuntistica," and in a two-and-a-half-hour-long traversal of Shostakovich's Twenty-four Preludes and Fugues.

Undermining Levit's newfound freedom was a deep dread for the future of his art. The classical-music world was already in a fragile economic state before the coronavirus struck. Now, with large gatherings forbidden indefinitely, an apocalypse looms. Levit does not face the immediate crisis that has overwhelmed so many working musicians: he is well paid for his concert appearances and recordings, and in 2018 he received the Gilmore Artist Award—a prize of three hundred thousand dollars that is given to a concert pianist once every four years. Levit says, "Those of us who are on the fortunate end of the profession have to be really, really careful about what we say, because so many people are suffering. Still, I look every day at the danger of my whole world dying. Systemically, we are in grave, grave danger. And I cannot say that music matters less, that it is not 'essential.' To me, it is absolutely essential. It is my reason for being."

Amid the agony of waiting, Levit ponders how he might apply his recent experiences to normal musical life, if and when such a thing resumes. "When I started doing these house concerts," he told me, "I realized that every single problem I had ever had with the performing world suddenly disappeared. I never really cared about acoustics. I never cared that much about the quality of the piano. All I wanted to do was play. The important point about these concerts is not how they sound but the fact that they happened. Everything is getting reduced to the essential thing of being there and playing." ♦

A DAY AT THE FULL CIRCLE RANCH
Here we are, eating toast once again!
Mail's here – must be eleven o'clock!
Lunchtime – no big shockeroo to anybody.
Yet another afternoon.
Round up steer?
Clean house?
Wait a minute... Didn't we have dinner here last night?
And so to bed.

THE AFTERLIFE



JONATHAN LETHEM

ILLUSTRATION BY ADAM SIMPSON

1.

R., a sculptor, rode a shuttle bus to the afterlife. He had no baggage. That the destination was the afterlife was understood, a given. This fact R. couldn't have explained. He didn't have to. None of the others on the bus—it was loosely packed, perhaps a third of the seats full—challenged R.'s certainty. They knew as well.

The facility was large. At a glance, all he had time for, R. failed to see its limits. Wide glass doors slid open, and R. and his fellow-passengers moved inside as if swept, yet willingly. Once they were within, the whole matter of the bus seemed irretrievably distant. (Had a movie been playing on an overhead screen? Had R. slept? What caused him to pay so little notice to the scene outside the windows, the journey that had led him here, to the afterlife?) In fact, as R. milled about, he soon lost sight of the doors by which he'd entered.

The central room, if it could be called a room, was almost unimaginably vast. Atrium? That was a word R. knew. This wasn't an atrium, nor was it a hangar. The ceiling, though high, wasn't so high as that, or arched. Instead, it was a flat, bland grid, translucent panels concealing the source of light.

Despite the size, R. was almost immediately aware of the presence of side rooms. Continuing to be swept by the general imperative of motion that had guided their entry, he and the others from the bus—which, he'd begun to feel certain, was only the most recent—dispersed and explored. There was room enough. R. turned a corner into one of the side areas, one relatively unoccupied. Windowless and featureless, in other situations it would have been a large room. It was small only in contrast to the larger area at R.'s back. There were at the start only three or four others here, others who, like R., kept moving, circulating across the endless floor, in some cases exchanging words. There seemed to be no prohibition on speech.

2.

R.'s work, his efforts for the past decade or more (the work his gallerist had advertised as his "signature"), consisted of a green-gray oatmeal surface applied over a variety of acutely angled abstract forms. They were sized to stand on the floor, at a height of three or four feet, to stand as unthreatening, enigmatic bodies in public space. The surface was pebbly and matte, neither exactly fleshlike nor vegetal. It was approachable, natural in affect, though actually consisting of polymers and resin. The shapes were derived from elements of functional objects—computer stands, electrical outlets, dish racks, etc.—displaced from their context and enlarged, so as to become unrecognizable. Sculpture was everywhere; it only took his eye to know it, and a few gestures to render it and coat it in the green-gray oatmeal concoction. His eye was good. His work sold in bunches.

In this place, as anywhere, R.'s eye scouted for uncommonly funky or graceful design features—bannisters or handles, sconces or vents, junctures where piping met ceiling or floor. He indexed these wherever he went, and turned the best he found into new sculptures. Here, there were none.

3.

R. began to wonder whether he'd find anyone he knew. Even as he registered the thought, he understood that this was a preoccupation among many of those roaming the floor. In fact, he saw now that it was this imperative that dictated the general movement, the characteristic circular milling. All present had seized on it by instinct, the urge to sort through the faces of others, in search of recognition. R. was party to this. More bodies had moved into the side room, perhaps feeling a kind of reverse claustrophobia, a terror of the vastness of the main space.

He grasped instantly that there was no reason to deny strangers acknowledgment. Or more than acknowledgment—brief, friendly greeting. Yet the hurly-burly militated against doing more. One was driven. There might always be a person one knew from before, if one only kept looking. Under such circumstances, even the briefest acquaintance would signify enormously.

A teen-ager, grinning, reached down, and touched the knees of R.'s pants. The gesture was obscure, not necessarily unfriendly. In any case, the teen mingled into the bodies and was lost. The crowd, loose at the outset, seemed to be growing denser. Was this happening only in the side room he'd entered? Perhaps it had grown crowded with those like R., who'd felt curious to see what it held. It appeared as though at the far end of the side room it opened to another enormous indoor space, one perhaps as without boundary as the one that R. had just left. Yet the density of bodies in the current room made it unappealing to attempt to cross. So R. turned back toward the large room from which he'd come, seeking free space.

Though things had grown generally more crowded, it was looser there, yes. He felt a little animation at this discovery, and a thrill—for the first time? Again?—at the extent of this space, and all the possible encounters contained within it. The smaller room, he saw now, had been a mistake, a waste of time. He resumed energetically milling. The point was to relish the freedom here, to refuse constraint. And among these numbers R. felt certain he'd find, if not actual acquaintances, then those like himself—his tribe, his type, his *people*.

"I hear—"

"Monsters are us—"

"How long does this go on?"

"Apropos of nothing—"

"Everything happens at parties."

"Does remembering make you sad?"

"I said to her, if the future of sex is bald men with ponytails, I want no part of it."

"—songs sung by ghosts—"

"They quit stocking the minibar—"

"Tell me about the time someone gave you money for something crazy."

"What happens to your shit when you're gone?"

"—vicarious holiday weekend—"

"I need a date."

"—perfectly good empty apartment in Bed-Stuy—"

"Funny? Or stupid? Or in bad taste?"

The moment R. attuned to speech, it rose and swirled around him. The fragments jostled his ears like the bodies jostling in this space. If he could

"You're wrong, Ted, this is absolutely the right time to organize three decades of photos."

• •

have written the words down they'd make epic mediocre poetry, or perhaps lyrics for a post-punk band. Here, now, on the floor, was a man who appeared to be doing just that, writing on a scroll-like piece of paper, but when R. knelt beside him he saw that the page was blank, and what he'd taken for a scribbling pen was only a moving finger. The man had a beard and glasses—he at least resembled a poet. Having gained the man's attention by joining him on the floor, forming a little haven in the sea of motion, R. thought to salvage the encounter.

"It doesn't add up to very much, does it?" R. said, with a shrug and a smile.

"It doesn't add up to anything at all!" the man said. "Not unless you saw the sequel."

"The sequel?"

" 'Avengers: Endgame'!"

4.

R. understood, barely. The fathomless movie, its fathomless sequel, panoplies of superhuman characters dying and being reborn. A passion for those who cared. R. didn't, or hadn't.

"I'm afraid I missed my chance—"

"Of course. You're like me, you haven't a clue! I need someone much younger."

Did the man really mean younger? Perhaps, R. thought, he only meant someone who'd arrived at this place more recently than him. Or had they all arrived here at once? R. couldn't know. Such thoughts only confused him. What he found sad was the drab common denominator, the franchise film. R. would have liked to discuss something more exalted with the distinguished-looking man. Real cinema, like Welles Orthman's "The Munificent Unpersons," say. Or the choreography of Katrina Rausch. That unforgettable long-ago evening at the Boerum Arts Museum, before Trina Mausch had died. But now this all seemed wrong, the signifiers jumbled, and receding into irrelevancy. Knowing the plot of "Revengers: Spendblame" might be the only social capital broad enough to signify here. Even that might be laughably parochial. Yet R. found himself wishing not to disappoint.

"Come, there must be someone." He offered a hand, drew the man to his feet, back into the game. "Someone must know."

The density of bodies had increased even since R. knelt. Now the obstacle to communication was less the rapidity with which others moved than the cumbersome nearness of those to whom one spoke. Still, R. worked on the man's behalf.

"Have you—did you happen to see—" R. found that he arrested no one's attention whatsoever. He tried leading instead with the hook, calling to the ceiling, rather than to anyone in particular, " 'Avoiders: Shamegame'—anyone know how it turns out?"

No reply came, only the rich incomprehensible babble and murmur of other voices, other priorities. When R. turned fully around he saw that he'd lost the bearded man in the movement of bodies. It wasn't important, after all. He'd wished only to help, but it was a thing that couldn't be helped.

A middle-aged woman in a sari addressed him. In indirect reply to his query? He wasn't certain.

"I'm sorry?" he said, cupping his hand to his ear. "Could you . . . I missed—"

She smiled, seeming to relish the scrap of continuity, an actual exchange. "I was just saying how hard this must be for Westerners like yourself."

"Oh," R. said. "Yes. Thank you. I mean—"

She was gone before he could ask her to define her terms: what was "this," *really*? Then again, didn't R. know what it was? Had his certainty wavered? Yet

what, precisely, had the woman in the sari assumed about him? R. was distracted from his quibbles by a sudden awareness, as if a suppressed frequency in his range of hearing had been nudged open by her suggestion: so many of the surrounding voices were speaking languages other than English. He'd been filtering. R. felt shame at his own assumptions, the limits in his own terms of inquiry.

Ahead, in the great stream of bodies, R. now spotted a kind of island, an area left vacant. He inferred it, as one moving through a landscape might infer the presence of a distant lake or beach from a break in the tree line. What formed this airspace? Why should there be some zone that others here avoided? R. felt compelled toward it. He longed for the elbow room. It really had grown impossible to move without making contact with those edging him on every side, despite how all were invested in the imperative of constant motion.

R. moved for the open space.

5.

The trench was long and wide, the sides banked and smooth. It sloped to water, perhaps to a depth of four feet at the bottom, no more. A handful of people had chosen—or at least R. preferred to think they'd chosen—to slide down. They now cavorted and splashed there, though it was hardly wide enough at the bottom to qualify as a swimming pool.

There was no guardrail. R. teetered briefly at the edge, trying to see. Were those at the bottom truly happy, or were they frantic?

"Can they get out again?" R. asked the person beside him just then, who was too near to distinguish exactly.

"We'd have to help them." The speaker's tone was not uncompassionate.

"How?"

"Form some kind of human ladder," the person mused, then squeezed off under a hedge of bodies, duckwalking to make an escape. The suggestion was adept, R. saw, though this level of organization seemed unlikely.

The waders had the pool to themselves, at least, for now. R., untempted, pushed away.

R. rode into the swirl, which had become almost like a human gear system. He found himself jostled upward, taken off his feet for an instant. His view of the plain of milling heads was instructive: the watery trenches were interspersed regularly throughout the vast concourse. The density of bodies made the gaps unmistakable. Had the floor slid open, at some point, to reveal the pools? Or was it that they'd become noticeable only now?

R. was pushed up against a structure that protruded quite unexpectedly into his path. Nothing so large as the trenches, it had been hidden in bodies until the last second. A kind of bench or table, it stood at elbow height. No—a minibar, a thing he'd heard mentioned earlier. Several bodies clung to it, like a raft.

Here, finally, a thing one might audition as a source for sculpture. Some portion of this bar or pedestal might give formal joy—to R., at least—if he envisioned it isolated from the whole configuration and sealed over with his distinctive green-gray oatmeal polymer. Yet how could he get far enough back to see it in its entirety? Hopeless. Anyhow, now that he bent to examine its join to the floor, the object was flagrantly, remorselessly uninteresting.

He should quit thinking this way.

6.

New people had been continuously arriving, that was the only possible explanation. And R. felt he could judge this

fact from their posture, from their murmured inquiries, the frisson of excitement in their tone even as they could locate barely an inch of floor to claim for themselves. You'll get over it, R. wanted to tell them, but didn't. He supposed he'd become a kind of veteran of this place, in what felt like little more than an hour. (Time was a ridiculous concept.) Hey, you kids, get off my lawn! he almost joked, but it was hardly funny. He felt both sorry for them and irritated that they could have no idea how easy it had once been to circulate.

At this thought, R. faintly recalled someone, long ago, trying to explain this place to him, the system that prevailed. Of course, he'd paid no attention. You don't care about that kind of stuff until you're forced to, mostly. And why should he have cared to listen then? It wouldn't have done any good. No, be where you are. Be there when you get there. And now he was.

7.

So it came at last, the undistinguished thing. R. was certain he'd been warned. The teeming reached its limit, and R. found himself toppled with a mass of others down a smooth bank, into one of the trenches. The only space that remained. R. had had no idea how near to one he'd been, the instant before. It had become impossible to see beyond the heads and shoulders massing so tightly, there was no one to blame but—R. managed to arrest this thought. No one to blame. It was so obvious. None raised any real protest, despite their bodies struggling pointlessly, a residue of instinct. No, the roar of voices seemed mainly to emanate from above, from those just discovering their nearness to the trench, just losing their foothold at the rim. Down here, among the fallen, it was strangely quiet.

The bodies close—he'd grown accustomed to that. R. found it almost consoling. When the water reached him, though, he felt puzzled by the physics: could the weight and the mass have displaced the shallow pool upward through the crevices? Or had more water been piped in now?

Maybe so. Then again, maybe not important to understand.

8.

R. woke again on the bus. He gathered himself just as they pulled up again, outside the place, the situation he'd so easily recognized, even the first time—curbside entrance, sliding doors, etc.—and allowed himself to be swept, with his cohort, into the afterlife. ♦

THE WRITER'S VOICE PODCAST
Jonathan Lethem reads "The Afterlife."

BOOKS

THE WAGES OF REALISM

Making sense of Henry Kissinger.

By Thomas Meaney

In 1952, at the age of twenty-eight, Henry Kissinger did what enterprising graduate students do when they want to hedge their academic future: he started a magazine. He picked an imposing name—*Confluence*—and enlisted illustrious contributors: Hannah Arendt, Raymond Aron, Lillian Smith, Arthur Schlesinger, Jr., Reinhold Niebuhr. The publisher James Laughlin, who was a backer of the magazine, described the young Kissinger as "a thoroughly sincere person (terribly earnest Germanic type) who is trying his hardest to do an idealistic job." Like his other early production, the Harvard International Seminar, a summer program that convened participants from around the world—Kissinger gamely volunteered to spy on attendees for the F.B.I.—the magazine opened channels for him not only with policymakers in Washington but also with an older generation of German Jewish thinkers whose political experience had been formed in the early thirties, when the Weimar Republic was supplanted by the Nazi regime.

For Cold War liberals, who saw the stirrings of fascism in everything from McCarthyism to the rise of mass culture, Weimar was a cautionary tale, conferring a certain authority on those who had survived. Kissinger cultivated the Weimar intellectuals, but he was not impressed by their prospects for influence. Although he later invoked the memory of Nazism to justify all manner of power plays, at this stage he was building a reputation as an all-American maverick. He appalled the émigrés by running an article in *Confluence* by Ernst von Salomon, a far-rightist who had hired a getaway driver for the men who assassinated the Weimar Republic's foreign minister. "I have now joined you as a cardinal villain in the liberal demonology," Kissinger told a friend afterward, joking that the piece was being taken as "a symptom of my totalitarian and even Nazi sympathies."

For more than sixty years, Henry Kissinger's name has been synonymous with the foreign-policy doctrine called "realism." In his time as national-security adviser and Secretary of State to President Richard Nixon, his willingness to speak frankly about the U.S.'s pursuit of power in a chaotic world brought him both acclaim and notoriety. Afterward, the case against him built, bolstered by a stream of declassified documents chronicling actions across the globe. Seymour Hersh, in "The Price of Power" (1983), portrayed Kissinger as an unhinged paranoiac; Christopher Hitchens, in "The Trial of Henry Kissinger" (2001), styled his attack as a charge sheet for prosecuting him as a war criminal.

But Kissinger, now approaching his ninety-seventh birthday, no longer inspires such widespread loathing. As former critics crept toward the political center and rose to power themselves, passions cooled. Hillary Clinton, who, as a law student at Yale, vocally opposed Kissinger's bombing of Cambodia, has described the "astute observations" he shared with her when she was Secretary of State, writing in an effusive review of his most recent book that "Kissinger is a friend." During one of the 2008 Presidential debates, John McCain and Barack Obama each cited Kissinger as supporting their (opposite) postures toward Iran. Samantha Power, the most celebrated critic of the U.S.'s failure to halt genocides, was not above receiving the Henry A. Kissinger Prize from him.

Kissinger has proved fertile ground for historians and publishers. There are psychoanalytic studies, tell-alls by former girlfriends, compendiums of his quotations, and business books about his dealmaking. Two of the most significant recent assessments appeared in 2015: the first volume of Niall Ferguson's authorized biography, which appraised Kissinger sympathetically from the right, and Greg Grandin's "Kissinger's Shadow," which approached him critically from the left. From opposing perspectives, they converged in questioning the profundity of Kissinger's realism. In Ferguson's account, Kissinger enters as a young idealist who follows every postwar foreign-policy fashion and repeatedly attaches himself to the wrong Presidential candidates, until he finally gets lucky with Nixon. Grandin's Kissinger, despite speaking the language of realists—"credibility," "linkage," "balance of power"—has a view of reality so cavalier as to be radically relativist.

Barry Gewen's new book, "The Inevitability of Tragedy" (Norton), belongs to the neither-revile-him-nor-revere-him school of Kissingerology. "No one has thought more deeply about international affairs," Gewen writes, and adds, "Kissinger's thinking runs so counter to what Americans believe or

ABOVE: SERGE BLOCH

Kissinger in 1972. Recent works in the vast literature on him have questioned fundamental assumptions about his outlook.

PHOTOGRAPH BY YOUSUF KARSH

wish to believe." Gewen, an editor at the New York *Times Book Review*, traces Kissinger's most momentous foreign-policy decisions to his experience as "a child of Weimar." Although Gewen is aware of the pitfalls of attributing too much to a regime that collapsed before his subject's tenth birthday, he is fascinated by the connections between Kissinger and his émigré elders, whose experiences of liberal democracy made them fear democracy's capacity to undermine liberalism.

Heinz Kissinger was born in 1923 in Fürth, a city in Bavaria. His family fled to New York shortly before Kristallnacht, settling in Washington Heights, a neighborhood with so many German immigrants that it was sometimes known as the Fourth Reich. They spoke English at home, and Heinz became Henry. In his youth, he displayed few remarkable qualities beyond enthusiasm for Italian defensive soccer tactics and a knack for advising his friends on their amorous exploits. As a teen-ager, he worked in a shaving-brush factory before school, and aspired to become an accountant.

In 1942, Kissinger was drafted into the U.S. Army. At Camp Claiborne, Louisiana, he befriended Fritz Kraemer, a German-American private fifteen years his senior, whom Kissinger would call "the greatest single influence on my formative years." A Nietzschean firebrand to the point of self-parody—he wore a monocle in his good eye to make his weak eye work harder—Kraemer claimed to have spent the late Weimar years fighting both Communists and Nazi Brown Shirts in the streets. He had doctorates in political science and international law, and pursued a promising career at the League of Nations before fleeing to the U.S., in 1939. He warned Kissinger not to emulate "cleverling" intellectuals and their bloodless cost-benefit analyses. Believing Kissinger to be "musically attuned to history," he told him, "Only if you do not 'calculate' will you really have the freedom which distinguishes you from the little people."

For all the imputations of Kissinger's Germanness, the indelible experience of his youth was serving in the 84th Infantry Division as it swept through Europe. "He was more American than I have ever seen any American," a comrade recalled. The work of the U.S. occupation, with its opportunities for quickly assuming positions of authority, thrilled him. In 1945, Kissinger participated in the liberation of the Ahlem concentration camp, outside Hanover, and earned a Bronze Star for his role in breaking up a Gestapo sleeper cell.

In 1947, Kissinger enrolled at Harvard on the G.I. Bill, intending to study political science and English literature. He found a second mentor, William Yandell Elliott, a well-connected history professor from the Wasp élite, who advised a series of U.S. Presidents on international affairs. The young Kissinger was drawn less to the classic exponents of Realpolitik, such as Clausewitz and Bismarck, than to "philosophers of history" like Kant and anatomists of civilizational decay such as Arnold Toynbee and Oswald Spengler. From these thinkers, Kissinger cobbled together his own view of how history operated. It was not a story of liberal progress, or of class consciousness, or of cycles of birth, maturity, and decline; rather, it was "a series of meaningless incidents," fleetingly given shape by the application of human will. As a young infantryman, Kissinger had learned that victors ransacked history for analogies to gild their triumphs, while the vanquished sought out the historical causes of their misfortune.

Ferguson and Grandin both seize on one sentence in Kissinger's undergraduate thesis, titled "The Meaning of History": "The realm of freedom and necessity can not be reconciled except by an inward experience." Such a deeply subjective world view might seem surprising in Kissinger, but French existentialism had arrived at Harvard, and the thesis cited Jean-Paul Sartre. Both Sartre and Kissinger believed that morality was determined by action. But for Sartre action created the possibility of individual and collective responsibility, whereas for Kissinger moral indeterminacy was a condition of human freedom.

In 1951, while pursuing graduate studies, Kissinger worked as a consultant with the Army's Operations Research Office, where he became familiar with the Defense Department's penchant for psychological warfare. To Kissinger's peers at Harvard, tailoring their résumés to the needs of the U.S. security state, his doctoral work—on the Congress of Vienna and its consequences—seemed whimsically antiquarian. But his published dissertation invoked thermonuclear weapons in its first sentence, and presented readers in Washington with an unmistakable historical analogy: the British and Austrian Empires' efforts to contain Napoleon's France held lessons for dealing with the Soviet Union.

Kissinger is sometimes called the American Metternich, a reference to the Austrian statesman who forged the post-Napoleonic peace. But here, weighing the careers of the men he wrote about, he stressed the limitations of Metternich as a model:

> Lacking in Metternich is the attribute which has enabled the spirit to transcend an impasse at so many crises of history: the ability to contemplate an abyss, not with the detachment of a scientist, but as a challenge to overcome—or perish in the process. . . . For men become myths, not by what they know, nor even by what they achieve, but by the tasks they set themselves.

Kissinger was taking a swipe at the bright-eyed social scientists around him, who thought that the deadly confrontation of the Cold War could be solved with empirical and behavioral models, rather than with existential swagger.

In 1954, Harvard did not offer Kissinger the junior professorship he had hoped for, but the dean of the faculty, McGeorge Bundy, recommended him to the Council on Foreign Relations, where Kissinger started managing a study group on nuclear weapons. In Eisenhower-era Washington, a fresh take on nuclear weapons could make your name. In 1957, Kissinger published the book that established him as a public figure, "Nuclear Weapons and Foreign Policy." It argued that the Eisen-

hower Administration needed to steel itself to use tactical nuclear weapons in conventional wars. To reserve nuclear weapons only for doomsday scenarios left the U.S. unable to respond decisively to incremental Soviet incursions. Kissinger intended his thesis to be provocative, and could not have known that Eisenhower's Joint Chiefs of Staff had been telling the President much the same thing for years.

By the late fifties, Kissinger did not need to choose whether to be an academic, a public intellectual, a bureaucrat, or a politician. Each sphere of activity enhanced his value in the others. He was a sought-after consultant to Presidential candidates; assuming that America's Wasp aristocracy offered the likeliest path to power, he spent years tutoring Nelson Rockefeller in foreign policy. In 1961, Bundy, who had become President John F. Kennedy's national-security adviser, hired Kissinger as a consultant. Kissinger also finally got tenure at Harvard. Members of the faculty objected that his nuclear-weapons book was unscholarly, but Bundy pushed the appointment through, persuading the Ford Foundation to put up money for his professorship.

Kissinger is hard to place among the foreign-policy thinkers of his time. Does he belong with America's most idiosyncratic and brilliant strategists, such as George Kennan and Nicholas Spykman? Typically, he is categorized with lesser "defense intellectuals," such as Hans Speier and Albert Wohlstetter. These men moved fluidly between lecture halls and RAND Corporation laboratories, where they complained about student protesters and gave alarming slide-show presentations about nuclear apocalypse.

Gewen prefers to put Kissinger among the more high-minded Weimar émigrés, although the "family resemblances" he finds are hard to pin down. Arendt never warmed to him, but they shared a disappointment about the U.S.'s early performance in the Cold War. In her book "On Revolution," Arendt worried that post-colonial nations, rather than choosing to copy American political institutions, were following the Communist script of economic liberation through revolution. Kissinger argued that the U.S. needed to better broadcast its ideology, and he did so with an evangelical fervor that went beyond anything Arendt intended. "A capitalist society, or, what is more interesting to me, a free society, is a more revolutionary phenomenon than nineteenth-century socialism," Kissinger said, in an interview with Mike Wallace, in 1958. "I think we should go on the spiritual offensive." This was the impulse not of a critical intellectual but of someone who did not question the American global mission.

The émigré closer in viewpoint to Kissinger was Hans Morgenthau, the father of modern foreign-policy realism. The two met at Harvard and maintained a professional friendship that waxed and waned over the decades. "There was no thinker who meant more to Kissinger than Morgenthau," Gewen writes. Like Kissinger, Morgenthau had become well known with a popular book about foreign policy, "Politics Among Nations" (1948). And he shared Kissinger's belief that foreign policy could not be left to technocrats with flowcharts and statistics. But, unlike Kissinger, Morgenthau was unwilling to sacrifice his realist principles for political influence. In the mid-sixties, working as a consultant for the Johnson Administration, he was publicly critical of the Vietnam War, which he believed jeopardized America's status as a great power, and Johnson had him fired.

Morgenthau and Kissinger both resisted describing themselves as practitioners of Realpolitik—Kissinger recoiled at the term—but Realpolitik has proved a remarkably flexible concept ever since it emerged, in nineteenth-century Prussia. Political thinkers grappling with Prussia's rise on a continent crowded with competing powers propounded several strains of strategic thought. In an increasingly bourgeois society, diplomacy could no longer be tailored to the whims and rivalries of a royal court; prudent foreign policy required marshalling everything at a state's disposal—public support, commerce, law—in order to project the image of power toward its rivals. The irony is that these doctrines were at root an attempt to codify something that their adherents believed Anglo-American statesmen already did instinctively. "We Germans write fat volumes about *Realpolitik* but understand it no better than babies in a nursery," the *New Republic* editor Walter Weyl recalled being told by a German professor during the First World War. "You

"It says it wants to do a crossword."

"Someday all this could be yours."

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Americans understand it far too well to talk about it."

America has never been short of statesmen capable of communicating their vision of the national interest to the public. If Kissinger was a realist, it was in this sense—of making the image-management aspect of foreign policy a priority. Morgenthau, though also fixated on the reputation of a state's power, believed that that reputation could not diverge too much from a state's ability to exercise its power. If the U.S. upset this delicate equilibrium, as he believed it was doing in Vietnam, other states, more realist in their assessment, would take advantage. The best a realist could do was adapt to situations, working toward a narrowly defined national interest, while other nations worked toward theirs. Idealistic notions about the advancement of humanity had no place in his scheme. For Morgenthau, Gewen writes, "war was not inevitable in international affairs," but "the preparation for war was." Wars waged by realists would be less destructive than ones waged by idealists who believed themselves to be fighting for universal peace.

Morgenthau was disappointed when Kissinger defended the Vietnam War in public, despite having privately admitted to him that the U.S. could not win. It took Kissinger's close contemporary the political theorist Sheldon Wolin—another son of Jewish émigrés who fought in the war and studied at Harvard with William Yandell Elliott—to fully dissect Kissinger's careerist instincts. On the surface, Wolin observed, Kissinger would have appeared a mismatch for the anti-élitist Nixon. But the pairing was perfect: Nixon needed someone who could elevate his opportunism to a higher plane of purpose and make him feel like a great figure in the drama of history. As Wolin wrote, "What could have been more comforting to that barren and inarticulate soul than to hear the authoritative voice of Dr. Kissinger, who spoke so often and knowingly about the 'meaning of history.'" Later, Kissinger liked to mention his qualms about taking the job with Nixon: he'd been so successful at mobilizing his academic pedigree in Washington that he might well have been appointed to the same position even if the Democratic candidate, Hubert Humphrey, had become President instead.

As early as 1965, on his first visit to Vietnam, Kissinger had concluded that the war there was a lost cause, and Nixon believed the same. Yet they conspired to prolong it even before reaching the White House. During the Paris peace talks, in 1968, Kissinger, who was there as a consultant, passed information about the negotiations to the Nixon campaign, which started to fear that Johnson's progress toward a settlement would bring the Democrats electoral victory. Nixon's campaign then used this information in private talks with the South Vietnamese to dissuade them from taking part in the talks.

Having won the election promising "an honorable end to the war," Nixon wanted to appear to be in pursuit of peace while still inflicting enough damage on North Vietnam to achieve concessions. In March, 1969, he and Kissinger began a secret bombing campaign in Cambodia, which was a staging ground for the Vietcong and the North Vietnamese. In four years, the U.S. military dropped more bombs on Cambodia than it had in the entire Pacific theatre during the Second World War. The campaign killed an estimated hundred thousand civilians, hastened the rise of Pol Pot, and irrevocably ravaged large tracts of countryside. It also fell so far short of its strategic aims that more than one historian has wondered whether Kissinger—who personally tweaked the schedules of the bombing runs and the allocation of planes—had some other motive. But, as Grandin writes, "he had built his own perpetual motion machine; the purpose of American power was to create an awareness of American purpose."

Gewen occasionally defends Kissinger's record more strenuously than Kissinger himself has done. He argues that the claims about the need to maintain "credibility" were rooted in legitimate concerns about securing a U.S.-led global order. But, as Morgenthau saw, Kissinger's argument rested on a disastrous miscalculation of America's capacities. How would the credibility of the United States be enhanced by dragging out a war against a fourth-rate power? How, to paraphrase John Kerry, do you ask thirty thousand American soldiers to die so that the thirty thousand soldiers before them will not have died in vain?

As it was, each successive American initiative eroded credibility rather than reinforced it. Not even the Christmas bombing of North Vietnam, in

1972, the largest of the war, could convince the North Vietnamese to renegotiate. The young Foreign Service officer John Negroponte offered a wry postmortem, which Kissinger never forgave: "We bombed the North Vietnamese into accepting our concessions."

Gewen also defends Kissinger's idea that every political event anywhere in the world demands a response somewhere else, a view that, in practice, made every pawn appear to be a threatened queen. When Nixon and Kissinger backed the Pakistani President Yahya Khan's genocidal campaign against East Pakistan, in 1971, they did so to show the Soviets that America was "tough." Four years later, Kissinger's sign-off on the Indonesian President Suharto's genocidal campaign in East Timor was meant to signal that America would unquestioningly reward those who had decimated Communists within their reach. In retrospect, the notion that everything America did would be duly registered and responded to by its opponents and friends seems like an expression of geopolitical narcissism. At the time, the thirty-three-year-old senator Joe Biden accused Kissinger, at a Senate hearing, of trying to promulgate "a global Monroe Doctrine."

Given Gewen's insistence on Kissinger's realism, it is odd that he does not dwell more on the most pragmatic episodes in his career—the pursuit of détente with the Soviet Union, the opening of relations with China, and the development of "shuttle diplomacy" to contain the 1973 Arab-Israeli war—which are still widely celebrated as major diplomatic achievements. Détente required Kissinger to prevail over hard-liner views of the Soviet leadership as ideologues bent on world domination and to see Leonid Brezhnev's Kremlin as populated by rational actors. Instead, Gewen often seems drawn to defend Kissinger at the points in his career where defense is hardest. He opens the book with a long chapter on U.S. involvement in Chile, which culminated in a coup, in 1973. When Chile elected the socialist Salvador Allende as President, in 1970, Nixon and Kissinger resolved to remove him. The fact that Allende was popularly elected made him only more dangerous in their

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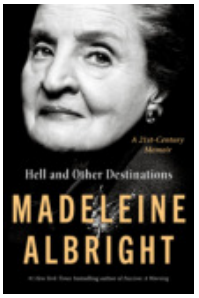
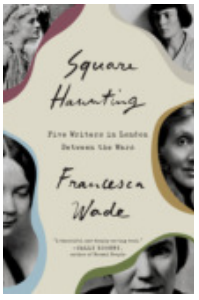
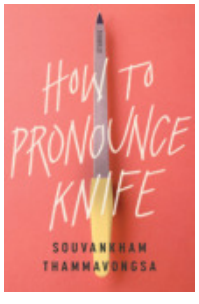


Hell and Other Destinations, *by Madeleine Albright (Harper).* This richly detailed memoir by the former Secretary of State covers the period since her departure from government, in 2001. With clarity and wisdom, Albright recounts moments of pride, like receiving the Presidential Medal of Freedom, in 2012, and acknowledges recent criticisms of her record, including those concerning the human cost of the sanctions that the Clinton Administration imposed on Iraq. Ultimately, the book presents an intricate portrait of a diplomat, and her ardent belief in democratic values and human rights, transatlantic partnerships and arms control, and open economies and sturdy institutions.



Square Haunting, *by Francesca Wade (Tim Duggan).* In interwar London, Mecklenburgh Square, in Bloomsbury, attracted intellectuals fleeing convention. Many of them were also feminists, who argued that women, like men, should possess the "freedom to know." This powerful collective biography focusses on five women who, at various times, called Mecklenburgh home: Jane Harrison, a classics don at Cambridge; Eileen Power, an economic historian; and the writers Virginia Woolf, Dorothy L. Sayers, and H.D. Just as Harrison and Power rewrote history to include the lives of forgotten women, so Wade reëstablishes the importance of thinkers like Power and H.D., whose legacies have been eclipsed by those of their male contemporaries.

Breasts and Eggs, *by Mieko Kawakami, translated from the Japanese by Sam Bett and David Boyd (Europa).* "It's like I'm in there, somewhere inside myself, and the body I'm in keeps on changing," writes one of the main characters in this searching, incisive novel, which follows three women in modern Japan, each facing the possibility of a physical transformation. One grapples with the prospect of finding a sperm donor and raising a child on her own. Another obsessively researches breast-augmentation procedures while her daughter, a teenager, retreats into silence during puberty. Kawakami, in her first book to be published in English, considers the agency that women exert over their bodies and charts the emotional underpinnings of physical changes—both intentional and unbidden—with humor and empathy.



How to Pronounce Knife, *by Souvankham Thammavongsa (Little, Brown).* In this début collection, fourteen piercing sketches illuminate the workaday routines and the interior lives of Laotian refugees. Characters who undertake "the grunt work of the world," laboring in poultry plants, hog farms, and nail salons, also harbor vivid fantasies. Mispronunciations occasionally produce brief glimpses of freedom in otherwise impenetrable places, as when, for one family, the seemingly meaningless phrase "trick or treat" becomes a magical key into an upscale neighborhood. In the titular story, a young girl who accidentally voices the first letter of "knife" moves from humiliation into defiance, as she feels herself temporarily crossing the boundary between "those who were seen, and those who were not."

eyes. "I don't see why we have to stand by and watch a country go Communist because of the irresponsibility of its own people," Kissinger observed. Gewen thinks this quip captures the tragic dilemma of Kissinger's relationship to democracy and power. "The statement looks a lot different if one has the rise of Adolf Hitler in mind," Gewen writes, and suggests that socialist Chile should be grouped with the Weimar Republic as examples of a people voting themselves out of a democracy. Gewen lists the sins and foibles of Allende—including "pernicious" wage increases for workers and indoctrinating the young in the "values of socialist humanism"—but withholds such scrutiny from his successor, the right-wing dictator General Augusto Pinochet, whose power the U.S. helped consolidate, and who, if one has the rise of Hitler in mind, seems rather more germane.

Similarly questionable is Gewen's assertion that "what cannot be dismissed is the Nixon/Kissinger worry that Chile under Allende was a paving stone on the road to Soviet hegemony." In fact, the Soviet Union had scaled back its rivalry with the U.S. in the developing world, where countering China now diluted its resources. The Cuban missile crisis, in 1962, and a failed attempt to establish a submarine base in Cuba, eight years later, had soured any hope for developing a true proxy state in Latin America. The Kremlin leadership was reluctant to increase the pittance it sent to Chile, knowing that Allende would spend it on badly needed American imports.

If Allende did represent a threat, it was almost certainly less to do with any Soviet ambitions than with his own powerful arguments for a global distribution of resources far beyond anything that Washington was prepared to countenance. Unlike Morgenthau and Kennan, who saw the non-industrial world as a backwater not worth America's attention, Kissinger considered Third World socialism a serious foe, capable of disturbing the U.S.'s delicate face-off with the Soviet Union. He and Nixon assumed, correctly, that they could back a coup against Allende with minimal fuss, just as Eisenhower, two decades before, had rid Guatemala of its democratically elected President, Jacobo Árbenz. Still, the spectacle of Allende's removal had one unintended consequence: it lit the wick of one of Kissinger's most durable annoyances, the global human-rights movement.

In 1972, when the Italian journalist Oriana Fallaci asked Kissinger to explain his popularity, he said, "The main point arises from the fact that I've always acted alone." Critics and defenders alike tend to accept this self-assessment, but his record shows a more mundane figure who assimilated prevailing foreign-policy assumptions. His most controversial moves have clear precursors. President Johnson had secretly bombed Cambodia, too, and, in 1965, he condoned Suharto's genocide in Indonesia, which in scale outstripped the one Kissinger approved in East Timor. The U.S.-backed interventions prefiguring Allende's removal include dozens in Latin America and the Caribbean alone.

Since leaving office, too, Kissinger has rarely challenged consensus, let alone offered the kind of inconvenient assessments that characterized the later career of George Kennan, who warned President Clinton against NATO expansion after the Soviet Union's collapse. It is instructive to measure Kissinger's instincts against those of a true realist, such as the University of Chicago political scientist John Mearsheimer. As the Cold War ended, Mearsheimer was so committed to the "balance of power" principle that he made the striking suggestion of allowing nuclear proliferation in a unified Germany and throughout Eastern Europe. Kissinger, unable to see beyond the horizon of the Cold War, could not imagine any other purpose for American power than the pursuit of global supremacy.

Although he has criticized the interventionism of neoconservatives, there is scarcely a U.S. military adventure, from Panama to Iraq, that has not met with his approval. In all his meditations on world order, he has not thought about how contingent and unforeseen America's rise as global superpower actually was. Nothing in the country's republican tradition prior to the Second World War demanded it.

Although Kissinger may not have originated the precepts for which he is best known, it is hard to find discussions of them that don't refer to his career. As Grandin has pointed out, Vice-President Dick Cheney's one-per-cent doctrine—the idea that a state has to act against enemies if there's even the merest chance that they can harm it—is thoroughly Kissingerian, and when Karl Rove reputedly said, "We create our own reality," he was echoing words of Kissinger's from forty years before. In 2010, the Obama Administration's lawyers used the precedent of Nixon and Kissinger's incursions into Cambodia as part of their argument to establish the legal basis for drone killings of American terrorist suspects who were outside the battlefield of Afghanistan. A Justice Department memo argued that military action in places like Yemen was justified when recognized threats had already spread there. The Trump Administration's recent assassination of the Iranian commander Qassem Suleimani, apparently intended to terrify the Iranians into ceasing Middle East operations, conforms to Kissinger's obsession with "credibility."

"Historians could learn a great deal about the years after World War II simply by studying the vicissitudes of Kissinger's celebrity," Gewen hazards toward the end of his book. One could go further: the main display of Kissinger's "realism" was in the management of his own fame, his transformation of a conventional performance into a symbol of diplomatic virtuosity. It can sometimes seem as if there has been an unconscious compact between Kissinger and many of his detractors. If all the sins of the U.S. security state can be loaded onto one man, all parties get what they need: Kissinger's status as a world-historic figure is assured, and his critics can regard his foreign policy as the exception rather than the rule. It would be comforting to believe that American liberals are capable of seeing that politics is more than a matter of personal style, and that the record will prevail, but the enduring cult of Kissinger points to a less palatable possibility: Kissinger is us. ♦

FUNGUS AMONG US

It makes our world possible. Does it offer lessons for how to live here?

By Hua Hsu

A seemingly brainless organism, the fungus is a model of coöperative resilience.

ILLUSTRATION BY ANDERS NILSEN

In 1957, a man from New York named R. Gordon Wasson published an article in *Life* about two trips he had taken, three decades apart. The first was to the Catskills, in New York, where his wife, Valentina, took a rambling walk in the woods and became enamored of some wild mushrooms. "She caressed the toadstools," Wasson recalled, "savored their earthy perfume." She brought them home to cook, and soon he, too, was enchanted. They spent the next thirty years studying and cataloguing various species, searching out literary and artistic works about mushrooms.

According to Wasson, the world is divided into mycophiles and mycophobes. Reverence might take a variety of forms—think of Eastern Europe or Russia, where foraging is a pastime. There's a famous scene in "Anna Karenina," in which a budding romance withers during a mushroom hunt. Wasson was particularly interested in societies that venerated the fungus for spiritual reasons. In Mexico, wild mushrooms were thought to possess "a supernatural aura."

There are any number of reasons that one might be mycophobic. Some people are put off by mushrooms' taste or texture—supple, with a fleshy resistance—and the fact that they somehow resemble both plant and animal. Others are creeped out by the way they pop up overnight, hypersensitive to atmospheric changes. As fungi, they feed on organic matter, and can be seen as vehicles of decay. In Wasson's view, Americans, and Anglo-Saxons as a whole, were mycophobic, and "ignorant of the fungal world."

In his forays against this ignorance, Wasson learned of a so-called "divine mushroom" consumed in remote corners of the world. In 1955, he finally found one of these communities, a small town in the mountains of southern Mexico. At the house of a local shaman, Wasson drank chocolate, then spent thirty minutes chewing "acrid" mushrooms. "I could not have been happier: this was the culmination of years of pursuit," Wasson wrote. For the next few hours, he experienced visions—resplendent motifs and patterns, mythical beasts and grand vistas, streams of brilliant color, constantly morphing and oozing, whether his eyes were open or closed—and he felt connected to everything he saw. "It was as though the walls of our house had dissolved," he wrote, and his spirit were soaring through the mountains.

The fact that Wasson was an otherwise straitlaced, politically conservative bank executive at J. P. Morgan lent this adventure a serious and respectable air. He began to wonder if he had unlocked a mystery uniting all of humanity: "Was it not probable that, long ago, long before the beginnings of written history, our ancestors had worshipped a divine mushroom?" Wasson's discovery turned, briefly, into a movement. Timothy Leary read about the Wassons and went to experience the mushroom himself, starting the Harvard Psilocybin Project. Spurred on by evangelists like Leary, young Americans turned to drugs (LSD, too, is derived from a fungus), along with alternative approaches to agriculture, diet, and sustainable living. Within a few years, the backlash against psychedelic drugs was in full swing, macrobiotic eating was relegated to the fringes, and it seemed that America had returned to its generally mycophobic ways.

But our attitudes toward the fungal kingdom may be evolving, with respect both to pharmacology and to food. In November, the residents of Oregon are scheduled to vote on whether to legalize psilocybin, the psychoactive

compound found in so-called magic mushrooms, for use in controlled settings. The effort has been backed by researchers and scientists, and passionately supported by David Bronner, the C.E.O.—in this case, cosmic engagement officer—of Dr. Bronner's Magic Soaps. The ballot initiative follows clinical trials conducted at Johns Hopkins, New York University, and U.C.L.A. in the use of mushrooms to treat addiction and depression. Psilocybin has already been decriminalized in Santa Cruz, Oakland, and Denver.

Meanwhile, the American diet includes more mushrooms than it used to—about four pounds per person a year, a gradual increase from just one in the sixties. The hefty portobello burger is ubiquitous, and, even before the current pandemic, there was a growing interest in the everyday role that fungi play in our lives on a microbial level: "home fermentation" (whether for sourdough, kombucha, kimchee, or harder stuff) has become a mainstream hobby. Amateur mycology has flourished on the Internet. There are videos about foraging, and how to induce any mushroom to release its spores onto a sheet of paper, leaving a beautiful print of its gills. I recently found a Web page devoted to pictures of mushrooms that convincingly resembled human butts.

Fungus, as Merlin Sheldrake writes in "Entangled Life: How Fungi Make Our Worlds, Change Our Minds, and Shape Our Futures" (Random House), is everywhere, yet easy to miss. Mushrooms are the most glamorous but possibly least interesting members of this kingdom. Most fungi take the form of tiny cylindrical threads, from which hyphal tips branch in all directions, creating a meandering, gossamer-like network known as mycelium. Fungus has been breaking down organic matter for millions of years, transforming it into soil. A handful of healthy soil might contain miles of mycelia, invisible to the human eye. It's estimated that there are a million and a half species of fungus, though nearly ninety per cent of them remain undocumented. Before any plants were taller than three feet, and before any animal with a backbone had made it out of the water, the earth was dotted with two-story-tall, silo-like fungi called prototaxites. The largest living organism on earth today is a fungus in Oregon just beneath the ground, covering about 3.7 square miles and estimated to weigh as much as thirty-five thousand tons. If fungus can inspire awe, it can also be a nuisance or worse, from athlete's foot to the stem rust that afflicts wheat and is considered a major threat to global food security. Last year, the C.D.C. identified the *Candida auris* as an emerging public-health concern; it's a sometimes fatal, drug-resistant pathogen that has emerged in hospitals and nursing homes around the world. The more we learn about fungi, Sheldrake observes, the less the natural world makes sense without them.

Sheldrake was drawn to fungi because they are humble yet astonishingly versatile organisms, "eating rock, making soil, digesting pollutants, nourishing and killing plants, surviving in space, inducing visions, producing food, making medicines, manipulating animal behavior, and influencing the composition of the earth's atmosphere." Plants make their own food, converting the world around them into nutrients. Animals must find their food. But fungi essentially acquire theirs by secreting digestive enzymes into their environment, and absorbing whatever is nearby: a rotten apple, an old tree trunk, an animal carcass. If you've ever looked closely at a moldy piece of bread—mold, like yeast, being a type of fungus—what appears to be a layer of fuzz is actually millions of minuscule hyphal tips, busily breaking down matter into nutrients.

The fungus kingdom spreads by way of spores. This is where mushrooms, the part of fungus that makes it above ground, show their prowess. The shaggy inkcap mushroom—soft and tender when cooked—can break through asphalt and concrete pavement. Each year, fungi produce more than fifty megatons of spores. Some mushrooms are capable of onetime exertions in which spores are catapulted through the air at speeds of fifty-five miles an hour. But the contribution that fungi make to the larger ecology is fundamental: by turning biomass into soil, they recycle dead organic matter back into organic life.

Sheldrake is in his early thirties, a biologist who holds a Ph.D. from the University of Cambridge. But his evangelical zeal for the fungal world makes it plain that he's drawn to the weirdness of it all. (His father, Rupert, is a former research biologist who became known for his belief in "morphic resonance," which posits a kind of shared consciousness within nature.) His book recounts the requisite tales of champion truffle hunters, psychedelic adventurers, his own love of home-brewing beer. One of the heroes of "Entangled Life" is Paul Stamets, a logger turned mycologist and entrepreneur who lives in Washington State. (Stamets also steals the show in "Fantastic Fungi," a 2019 documentary directed by Louie Schwartzberg and narrated, somewhat creepily, by the actress Brie Larson.) In 2005, Stamets published "Mycelium Running: How Mushrooms Can Save the World," an influential work that was taken up by fellow fungal enthusiasts as a kind of manifesto. A TED talk drawn from the book has been viewed millions of times.

Stamets's fascination with fungus began with a world-changing moment of his own: a psilocybin trip cured him of a lifelong stutter. Convinced of the mushroom's special power—he could talk to girls now!—he began harvesting exotic varieties, building a profitable mail-order business that sells grow kits, extracts, cultivation gear, even fungal dog treats (Mutt-rooms). He briefly worked with the Department of Defense to study the antibacterial and antiviral compounds that fungus had developed to protect itself in the course of millions of years. Penicillin had famously been isolated by accident, in 1928, when Alexander Fleming noticed that his petri-dish colony of staphylococcus had been ravaged by an incidental growth of mold. Perhaps our old-growth forests, filled with mycelia that had adapted in order to ward off invasive bacteria, held the key to preventing future pandemics. Their preservation, Stamets believed, was a matter of national security.

Stamets is an advocate of what he calls mycoremediation—the use of fungi to remove toxic substances from the environment. Fungi have helped clean up diesel-contaminated soil; they've broken down pesticide residues, crude oil, and plastics. Disposable diapers can linger in a landfill for hundreds of years, but in 2014 scientists reported that they had grown oyster mushrooms on a sub-

stance made from used diapers, reducing their weight and volume by eighty per cent. (And the mushrooms were safe to eat.) Mycelium is even capable of filtering *E. coli* or heavy metals from polluted water. Sheldrake describes a company in Finland that has adopted these mycofiltration techniques to reclaim gold from electronic waste. The firm Ecovative Designs has developed mycelium-based packaging that resembles Styrofoam but biodegrades within thirty days. It also helped devise a mycelium-based alternative to leather, which was used in a prototype of a Stella McCartney handbag.

Stamets's ardent advocacy inspired a man named Peter McCoy to help start an organization called Radical Mycology. McCoy, who is also an anarchist and a hip-hop artist, has devoted his life to a radically decentered, fungus-inspired method of sharing information. He founded an online mycology school and preaches "Liberation Mycology." "Where one Radical Mycologist trains ten," McCoy says, "those ten can train a hundred, and from them a thousand—so it is that mycelium spreads."

For Wasson, fungus was related to the transcendent, the realm of worship, of reverence; for Stamets, fungus was an instrument for environmental resilience and restoration. But can fungus, finally, provide a political vision? What might we learn, Sheldrake asks, from the "mutualism" and coöperation of a seemingly brainless organism?

Sheldrake notes that the hyphal tips of mycelium seem to communicate with one another, making decisions without a real center. He describes an experiment conducted a couple of years ago by a British computer scientist, Andrew Adamatzky, who detected waves of electrical activity in oyster mushrooms, which spiked sharply when the mushrooms were exposed to a flame. Adamatzky posited that the mushroom might be a kind of "living circuit board." The point isn't that mushrooms would replace silicon chips. But if fungi already function as sensors, processing and transmitting information through their networks, then what could they potentially tell (or warn) us about the state of our ecosystem, were we able to interpret their signals?

Sheldrake also tells us about Toby Kiers, an evolutionary biologist who was taken with Thomas Piketty's "Capital in the Twenty-First Century" and its insights on inequality. She wondered how mycorrhizal networks, the symbiotic intertwining of plant systems and mycelium, deal with their own, natural encounters with inequity. Kiers exposed a single fungus to an unequally distributed supply of phosphorus. Somehow the fungus "coordinated its trading behavior across the network," Sheldrake writes, essentially shuttling phosphorus to parts of the mycelial network for trade with the plant system according to a "buy low, sell high" logic.

The anthropologist Anna Lowenhaupt Tsing has explored the story of global capitalism through mushrooms. In 2015, she published "The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins," which followed the trade in the prized matsutake mushroom from a community of Southeast Asian refugees who are among the top foragers in the Pacific Northwest to the auction markets of Japan, where matsutake fetch a thousand dollars a kilogram, and on to chefs and discriminating diners in the world's most cosmopolitan cities.

There's a double meaning to Tsing's title. The mushroom is at the end of the known world because it's hard to find, a secret tucked deep in the forest. But she's also hinting at the end of the world as we know it, given our instinct for extracting as much from the earth as we can. Humanity has never seemed so finely calibrated and rationalized: the seamless journey of a very expensive mushroom from nature to a dinner plate tells this story. But things have never seemed so precarious, either. During the current pandemic, images have circulated which suggest that the earth is better off with many of us staying at home. There have been fantastical stories of dolphins in the canals of Venice, penguins sauntering through an empty aquarium. And, as industry idled and vehicles went undriven, there was the rare sight of clear skies in Beijing and Los Angeles. Following the nuclear blast at Chernobyl, the industrious, resilient fungi were among the earliest living things to appear. They seemed to grow on the reactor walls, attracted to radioactive "hot" particles. In fact, they appeared capable of harnessing radiation as a source of energy, as plants do with sunlight. The first thing to grow from the soil after the atomic bomb decimated Hiroshima was, reportedly, a matsutake mushroom.

Scientists still don't understand how fungi coördinate, control, and learn from such behaviors, just that they do. "How best to think about shared mycorrhizal networks?" Sheldrake wonders. "Are we dealing with a superorganism? A metropolis? A living Internet? Nursery school for trees? Socialism in the soil? Deregulated markets of late capitalism, with fungi jostling on the trading floor of a forest stock exchange? Or maybe it's fungal feudalism, with mycorrhizal overlords presiding over the lives of their plant laborers for their own ultimate benefit." None of these attempts to fit fungi into the logic of our world are entirely persuasive. Perhaps it's the other way around, and we're the ones who should try to fit into the fungus's model. A truffle's funky aroma evolved to attract insects and small rodents, which feast on the spores, then spread them throughout the forest via their fecal matter. For many, the pleasure of psilocybin is in giving oneself up to the weft of a connected world, and making peace with one's smallness.

Maybe the vision that unites our mycophiles, from Wasson to Stamets and Sheldrake, isn't so freakish, after all. The divine secret is the magic of the mundane, and one needn't fly too high to witness it. The composer John Cage was an avid forager who supplemented his income by selling prized mushrooms to upscale restaurants. He once persuaded administrators at the New School to allow him to teach a course on mycology alongside his music classes. "Often I go in the woods thinking after all these years I ought finally to be bored with fungi," Cage confided in his diaries. But his sense of revelatory delight never faltered. "Supreme good fortune," he wrote, as he held a fine specimen in his hand. "We're both alive!" ♦

MAKING BOLD

Wanda Coleman's fearless invention.

By Dan Chiasson

"I make one chicken feed five," Wanda Coleman wrote in "My Love Brings Flowers," a poem from 1983. "Make clothes ten years old fashionable / rejuvenate one fake sable coat." Coleman, who died in 2013, was one of the great menders in American verse: she found the extra wear in old forms like the sonnet and rummaged for new forms in everyday material, like aptitude tests, medical reports, and want ads. Poets sometimes brag about their fearsome powers of transformation; Coleman, beset by hardship for much of her life, kept her boasts closer to the bone. "I scrape bottom," she wrote, and yet her poetry drew on deep reserves. Given Coleman's almost chaotic originality, it is touching to encounter her stark admissions of debt: "I borrow from friends." At a moment when many of us are learning—and teaching one another—how to make a face mask out of a sock or a bra, Coleman's poetry might be just the model of inspired, ecstatic thrift we need.

A new volume of her selected poems, "Wicked Enchantment" (Black Sparrow Press), edited by the American poet Terrance Hayes, has brought Coleman—who often seemed to relish the position of outsider—into the spotlight. She was born in Watts, in South Los Angeles, in 1946, and lived most of her life in and around the city. Her mother worked as a housekeeper, sometimes for movie stars, including Ronald Reagan. Her father, a boxer in his youth, worked as a sparring partner for the light-heavyweight champion Archie Moore. "They beat his / head for decades," Coleman writes, "until / a tumor rose from the wound and devoured his eyes." Her parents' experiences must have shaped her art's insistent transparency about what people do to make enough money. And her choice of an art that barely paid meant that, for much of her life, Coleman, who had two children and often parented alone, had to get very good at economic improvisation. Throughout her career, she worked as a Peace Corps recruiter, a waitress, a medical secretary, a radio host, a screenwriter, and a university lecturer—a very L.A. résumé. Coleman won an Emmy, in 1976, for her writing on the daytime soap opera "Days of Our Lives," and wrote an episode of the much rerun buddy-cop show "Starsky & Hutch." Soon she devoted herself more fully to her own writing and performing. Her first full-length book of poetry, "Mad Dog Black Lady," appeared in 1979, and was followed by a dozen or so more, as well as short stories, essays, and a novel. "Mercurochrome" (2001), a volume of poetry, was a finalist for the National Book Award.

In an interview with the Poetry Society of America, Coleman defined herself as a "Usually Het Interracially Married Los Angeles-based African American Womonist Matrilinear Working Class Poor Pink/White Collar College Drop-out Baby Boomer Earth Mother and Closet Smoker Unmolested-by-her-father." That checklist is a performance, building upon itself; asked a second time, she might have produced an entirely new inventory with its own brilliant, funny, and tragic surprises. In an early poem, Coleman describes a police officer appearing at her door at 7 A.M. ("Coitus interruptus LAPD is a drag.") She "showed 'em alias #3" and, returning to bed, "started fucking again / but things had changed."

American poets often insist on aliases and multiple identities: Bob Dylan plucked from Whitman's famous line "I am large, I contain multitudes" for the title of his second coronavirus surprise single. For Coleman, shape-shifting was not an aesthetic virtue but an inevitable means of survival, and also a lethal risk. "I have been known to imagine a situation / and then get involved in it," she writes, in "Wanda in Worryland." She

PHOTOGRAPH BY MICHAEL J. ELDERMAN

has "gone after people/with guns" and rocks and fists, but also "with poems":

> i get scared sometimes
> and have to go look into the mirror to see
> if i'm
> still here

Coleman evokes both senses of "going after": confronting fighters but also following, imitating, and learning from writers. To stand up to her predecessors was a form of homage. Coleman often designated her poems as being "after"—not "for"—her mentors, heroes, and friends. There are poems "after June Jordan," "after Elizabeth Bishop," "after the song by Herbie Hancock," and "after Sun Ra." The range of these dedications implies the variety of shapes a tribute can take: a poem "after John Berryman" is a spat; another "after Coltrane" is a lovefest.

Coleman's work recoups ground from her idols and rivals, even as it acknowledges their genius. A poem "after Allen Ginsberg" modifies his famous poem "A Supermarket in California," which itself is a nod to a master. "What thoughts I have of you tonight, Walt Whitman," Ginsberg writes. "What bohunkian images i have of you," Coleman writes. "I sputter/between the confused and the absurd as i cruise for pudding/and citrus-free hand lotion." Ginsberg's surreptitious queering of the American supermarket was one kind of confrontation with history; Coleman, without the luxury of being furtive, is "detected via camera/lens while picking over pepper mills" and makes her own piqued revision, returning the experience of grocery shopping to quotidian reality. For a black woman, this reality includes the fear of being accused of stealing. "The only Walt here is Disney," Coleman writes, trying to find cheap, healthy food. "The pork chops are killing me."

Coleman's one hundred "American Sonnets" are scattered throughout five books: "African Sleeping Sickness" (1990), "Hand Dance" (1993), "American Sonnets" (1994), "Bathwater Wine" (1998), and "Mercurochrome." Sonnets are often at odds with their own brevity, building into their short span little interludes and pauses. Rarely does a poet seem to want to take an already brutally brief form and speed it up. But Coleman's sonnets are sprints, which is what makes their improvisations, modelled on American blues and jazz, so compelling. "American Sonnet 61" has short lines, a jagged right margin, and a tricky tone, both barbed and passionate: "reaching down into my griot bag," Coleman finds ancestral license (a griot is a traditional West African poet) but also the patronizing expectation that she will pull out "womanish wisdom and wily/social commentary." Instead, she produces "bricks/with which to either reconstruct/the past or deconstruct a head." The sonnet becomes a poem about sadness and its costs. "Dolor," she writes:

> robs me of art's coin
> as i push, for peanuts, to level walls and
> rebuild the ruins of my poetic promise.

That last phrase, like so many of Coleman's, abounds with sarcasm. One of the greatest poets ever to come out of L.A., she shaped the city's literary scene like few before her. And yet, even after she'd forged her own "infinite alphabet of afroblues/intertwinings," she still felt that she was measured against the literary gatekeepers' idea of her "poetic promise," now in "ruins."

Coleman's poems present, side by side, exasperation and joy. They both tally and transcend the difficulties of an often broke black woman, working in perhaps the world's least remunerative profession. Cursing her art, she often manages some of its most memorable language: poetry is "rood music for the cash bereft/as titans clash in the space of a Hollywood toilet." Yet few poets write so powerfully about the underground freedoms possible in an economy rigged to defeat them. In "Want Ads," part of a contemporary mini-genre of poems inspired by personal ads (C. D. Wright's "Personals" is an influential example), Coleman cites her daunting odds of finding a partner ("a 46% remarriage rate for black women contrasted/with 76% for white women") and mocks the "modest maidenly pubis" of a white bride, her "tresses" kept "glistening and tangle free." Such is the "youthful stuff sonnets/and prayers are made of." Instead of that prim and coiffed material, Coleman offers the "kinky snarls" of her own body and of her poems. You can hear in the title, "Want Ads," a brilliant play on her own first name: in Wanda Coleman's poems, it's the want that adds the value. ♦

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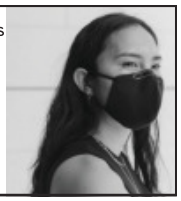

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THE THEATRE

NATURE'S MIRROR

Richard Nelson's Apple family and Molière's misanthrope on Zoom.

By Alexandra Schwartz

In Nelson's new play, Zoom isn't a technical compromise but an integral plot point.

There's been ample time, during the past few endless weeks, for a person who misses theatre to think about what theatre gives us that's different from what we get from other kinds of art and performance. We have television to entertain us, movies and books to sustain us. What can plays do? When in doubt, it never hurts to consult Hamlet. "The purpose of playing," the Danish prince tells us, "was and is to hold, as 'twere, the mirror up to nature, to show virtue her own feature, scorn her own image, and the very age and body of the time his form and pressure." Theatre can be fleet, spare, and adaptive, reactive to and reflective of the immediate conditions of its creation. Plays may spend years in development, but, in a pinch, a few days will do. Ideally, a play shares a room with its audience, but, as we're all discovering, a screen can work, too. Fabulous effects are nice if you can get them—there's a reason that the National Theatre's weekly streams of its beautifully filmed productions, with their luscious set and lighting designs, have become wildly popular—but the truth is that all you need to make a play work is a human voice or two.

Going by Hamlet's definition of theatre as a mirror for the body of our times, the end of April brought the first great original play of quarantine, Richard Nelson's "What Do We Need to Talk About?," which was commissioned by the Public, as a benefit performance, and streamed on YouTube on the last Wednesday of the month. The play is a surprise addition to Nelson's "Apple Family" cycle, the accidental child conceived long after the rest of the kids are grown. Until now, there were four plays about the four Apples, middle-aged siblings based in Rhinebeck, New York. The first one was performed in 2010, the last in 2013, and, as with "The Gabriels," Nelson's subsequent play cycle set in Rhinebeck, each took place, and was performed, during a moment of national significance. Recently, Channel Thirteen made recordings of the earlier Apple plays available to stream, and it was a subversive delight, given the hagiographic mood of the moment, to discover that the first line spoken in the first play, "That Hopey Changey Thing," is "Fuck you, Andrew Cuomo." (The play takes place on the day of the 2010 midterms, which happened to also be the date of the governor's election.) "You see, with Andrew, everything is about politics, celebrity politics. What gets noticed, what makes the impression," Richard Apple (Jay O. Sanders), a lawyer in the state attorney general's office, says. The governor's current daily press conferences, acts of public service which double as canny pieces of theatre in their own right, may be the exception that proves the rule.

The new play seems to have come as a surprise to Nelson, too. He was working on the second installment of "The Michaels," his latest Rhinebeck-set cycle, when the coronavirus hit. The success of fictional characters can be measured by their power to endure in the mind, the way people do; when Nelson thought about how he might address the pandemic, the Apples were right there, waiting to be reanimated and spoken through.

"What Do We Need to Talk About?" (directed by Nelson) takes place, inevitably, on Zoom, which, for once, isn't an irritating technical compromise but an integral plot point. Rather than gathering around the dining-room table, as they usually do, the siblings congregate online, to catch up for an hour or so at the end of the day. The first to appear

ILLUSTRATION BY KEITH NEGLEY

is Barbara (Maryann Plunkett), who, as we discover, has just come home from the hospital, where she managed to recover from COVID-19. Richard (Sanders, who, like the rest of the cast, is reprising his role), the lone brother of the family, is quarantined with her; the fact that he, and not the domestic-minded Barbara, cooks and serves dinner tells us how serious her condition must have been. (No actors were harmed, or social-distancing protocols violated, in the making of this play; Sanders and Plunkett are married.)

One by one, new Zoom squares pop up onscreen, outlined in marquee neon. Jane (Sally Murphy), the youngest Apple, and Tim (Stephen Kunken), her partner, are in different rooms in their Rhinebeck apartment, because Tim has a mild case of the virus. Marian (Laila Robins), the middle sister, arrives late, as she always does, nicely dressed and wearing lipstick in an assertion of dignity. Apart, together, they drink wine, poke fun at one another, briefly squabble, and discuss the banalities of the day. Cuomo gets grudging high marks ("Who would have believed it?"); there is talk of the risks and the rewards of grocery shopping, the Zen satisfactions of dish-washing, and other aspects of the new normal.

All of Nelson's Rhinebeck plays pull off sneaky feats of verisimilitude. Just as things seem almost too ordinary and unremarkable to bear depiction—though how remarkable that the habits of quarantine already feel rote—a startling deepening takes place. In "What Do We Need to Talk About?," the tone begins to shift when Tim, who is an actor and a restaurateur, reminisces about an acquaintance, the real-life actor Mark Blum, who died in March, of coronavirus complications, at the age of sixty-nine. All the actors in the production likely knew Blum, but their characters didn't, and watching them react to the news of the loss of this stranger with muted, abstract sympathy yielded a double-edged grief.

A second shift happens when Barbara, who's a high-school English teacher, tells the group that she's assigned the Decameron to her students, and suggests, à la Boccaccio, that each member of the call tell a story to entertain the others. Jane, a writer with a childlike, delighted spirit, goes first, offering a twisty bit of intrigue about women authors and identity-swapping in the nineteen-fifties; Marian, a second-grade teacher who's working on a book about the family, follows, with a clue to an old Apple mystery that she discovered in the course of her research; Richard tells a joke about President Franklin Pierce and a yappy dog sent by a visiting Japanese delegation; and Tim, who has theatre on the brain, relates a theory that "The Cherry Orchard" is about "the need to heal," which might sound like twenty-first-century self-help babble projected backward onto Chekhov, if it weren't for the circumstances. In hard times, we look to art to tell us the things we need to hear.

Barbara's contribution is a recording that she made of the sibling's late uncle Benjamin (Jon DeVries) reciting the Walt Whitman poem "The Wound-Dresser," which he did, in the second Apple play, to commemorate the anniversary of September 11th. The poem is narrated by an old man who cares for injured Civil War soldiers, and what was sombre and heartrending in the earlier play is now freshly piercing. Another decade, another crisis, this one unending, still unfathomable. Switch the old and the young, the healers and the dying. Barbara—reserved, pragmatic, and irony-proof, the predictable axle around which her siblings rotate—can't express in words what she feels about her own brush with death, so she says it with music: the "Dona nobis pacem" from Bach's Mass in B Minor, which she plays through her phone speaker, an offering to all of us behind our own screens.

As the play ends, the siblings sign off one by one, leaving those remaining to gossip about them in their wake, until Barbara is left alone again. She stares at her screen, looking at her own face, as if registering that, against the odds, she is still here. On the night of the performance, more than five thousand viewers looked back. We were there, too.

Theatre is an art of the present, which makes it prone to error. On May 2nd, Molière in the Park, an outdoor troupe that had its inaugural season last year, together with the French Institute Alliance Française and the Prospect Park Alliance, put on a Zoom production of "The Misanthrope" (in Richard Wilbur's nimble translation, directed by Lucie Tiberghien). The performance suffered at first from technical difficulties—a pesky audio-feedback loop sent the actors' words boomeranging back to them—which was briefly annoying and then, suddenly, became wonderful, as viewers messaged their support and waited patiently for the problem to be solved. The hiccup made live theatre feel alive, and what could be better than that?

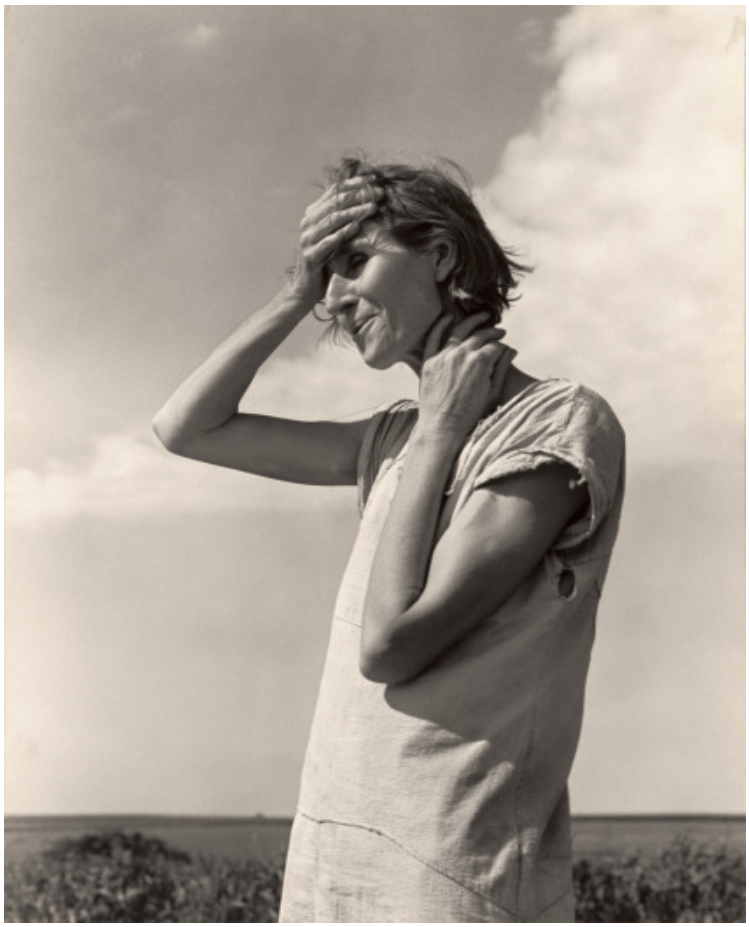
The Molière in the Park approach suggests a simple, satisfying formula for making theatre in the age of the lockdown. Choose a classic text—preferably not too long, preferably funny—get good actors to perform it into their devices, and voilà. It helps that Molière didn't much care about his plays' settings; the language is the thing. This "Misanthrope" takes place during quarantine, of course, in an environment of comical, generic luxury. (Kris Stone's Zoom production design transposed the actors into what looked like a West Elm catalogue; in one scene, their clothing matched the virtual wallpaper of the virtual rooms they were in, a nice touch.) The misanthrope in question is Alceste (Jared McNeill, who has a lovely, salted-butter kind of voice), a nobleman revolted by the falsity and the folly of the world, except when that folly involves Célimène (Jennifer Mudge), his paramour, who flirts as she breathes and won't stop entertaining suitors. Much drama ensues ("The Real Housewives of Molière!" a member of the digital audience aptly commented), alternately doused by Alceste's buddy Philinte (Postell Pringle) and enflamed by the gossip Arsinoé (a bawdy Heidi Armbruster). "I've made up my mind / to have no further commerce with mankind," Alceste finally decides, stumping off to join the rest of us in isolation. When the cast reappeared to take their Zoom bows, inclining their heads toward their computer cameras, they were greeted with written "bravo"s and the sound—joyful to imagine—of many yellow hand emojis clapping. ♦

THE ART WORLD

OUT OF THE DARK

Dorothea Lange and Félix Fénéon at MOMA.

By Peter Schjeldahl



Lange's "Woman of the High Plains, Texas Panhandle," from 1938.

DOROTHEA LANGE / COURTESY MOMA

Two terrific shows that languish in darkened galleries at the Museum of Modern Art should not pass uncelebrated—or unvisited, to the extent that MOMA's Web site ameliorates the lockdown. It helps that both shows feature a good deal of verbal content and may well incite Googling of their brilliant subjects: Dorothea Lange, the premier photographer of the human drama of the Great Depression, and Félix Fénéon, a shadowy French aesthete and political anarchist. Fénéon was also a sometime art critic, dealer, collector, and journal editor, and a legendarily sardonic wit—not an artist but an art-world sparkplug. Best known for having coined, in 1886, the term "Neo-Impressionism," and for his championing of Georges Seurat, he is characterized in the show's catalogue as "implacable, inscrutable, meticulous, and mysterious." Lanky and sporting an Uncle Sam-like goatee (Henri de Toulouse-Lautrec portrayed him in profile at the Moulin Rouge, accompanied by a rotund Oscar Wilde), Fénéon merits nothing so much as the latter-day American honorific "cool." There's a mystery about Lange, too, which owes to her evasiveness about being called an artist, rather than a documentary photographer. In fact, she was a supreme artist, whose pictures lodged the Depression in the world's imagination and memory at least as much John Steinbeck's writing did: with truths to life on a scale of everlasting myth.

Lange was born in Hoboken, New Jersey, in 1895, and went to school on New York's Lower East Side, a rare Gentile among thousands of Jewish schoolmates at P.S. 62, on Hester Street. Her father abandoned the family when she was twelve. A childhood bout of polio left her with a lifelong limp, which, she said, "formed me, guided me, instructed me, helped me, and humiliated me." Determined to become a photographer even before she first used a camera, she assisted at studios throughout the city and studied the medium at Columbia University. In 1918, would-be world travels with a friend stalled in San Francisco, after the two women were robbed. There Lange found patrons for a studio of her own and became a successful portraitist of the city's élite. (She also married a painter, Maynard Dixon, and had two children.) Her grounding in portraiture seems key to her subsequent singularity. With the onset of the Depression, she took to the streets. Her photograph "White Angel Bread Line, San Francisco" (1933), of a dejected man turned aside from a mass of others, became a public sensation. Between 1935 and 1939, she drove the back roads of the West and the South as part of a program that promoted the New Deal by distributing the resulting material to newspapers and magazines.

Lange stood out from the start. Her sensitivity to faces individualizes each of her subjects. The encounter is an event in that subject's life—and in Lange's own. Her images defy generalization. Facts of poverty and exhaustion speak for themselves. Lange cuts through them to specific presences, whose thoughts we seem to know, and which she enhanced with vernacular quotations that she compiled, with her second husband, the economist Paul Taylor, in the book "An American Exodus: A Record of Human Erosion," in 1939. The MOMA show has a subtitle, "Words and Pictures"—Lange insisted that photographs complete their meaning in tandem with verbal information. That amounts to heresy for a modernist, which Lange intuitively was in formal discipline, with her masterly compositions and eloquent gradations of light. Yet she shrugged off the aesthetic appeal

of her work, determined not to stand between her subjects and their effects on the broadest possible public.

One day in 1936, at a blighted pea field in Nipomo, California, she came upon the subject of what is perhaps history's most famous photograph, "Migrant Mother"—a thirty-two-year-old Cherokee woman, Florence Owens (later Thompson). With three children huddled against her in an open tent, the woman's mingled anxiety and resilience transfix a viewer's mind and heart. No sentimental response is possible in the evocation of vast, rock-hard realities that have come down, for an instant, to one synoptic point. Publication of the picture in the San Francisco *News* spurred a rush of food aid to Nipomo, where today a public school is named for Lange. It emerged later that Lange had got details about her subject wrong. Not a pea picker, Owens had stopped at the field briefly, awaiting a car repair. She was not identified as the image's subject until forty-two years later, when she had risen to tolerably comfortable circumstances. This instance of Lange's faulty reporting suggests to me that her declared deference to verbal supplementation was a feint, hiding the transcendent artistry of her eye in plain sight.

On a side note, I felt a twinge as I was looking on my laptop at pictures by Lange, which include a series taken of Japanese-Americans about to be sent to internment camps during the Second World War—work that was commissioned and then suppressed by the federal government. One of the best known is a shot of children, Japanese-Americans and others, with hands on hearts, apparently reciting the Pledge of Allegiance. Lange's images show the detained as regular people who had to cope with an outrageously unjust confinement—and who, in doing so, were buoyed by being together, at least. Among other strengths, Lange was a poet of the ordinary but imperious human need, under any conditions, for mutual contact.

The first intriguing fact that's new to me about the unpredictable Félix Fénéon is that he never liked the carnivalesque Pointillist portrait, painted by Paul Signac, in 1890, that makes him look like a dandyish magician pulling a lily from a hat against a blazing vortex of abstract patterns. Given the picture by Signac, Fénéon kept it hanging in his home until his death, fifty-four years later, but airily pronounced it one of Signac's weaker pieces. The MOMA show displays it with works by other of Fénéon's favorite artists—twenty-one by Seurat, several each by Matisse and Bonnard—as well as objects that reflect his pioneering interest in African, Native American, and Oceanic tribal art. Less than enthusiastic about Picasso, he greeted "Les Demoiselles d'Avignon," in 1907, by advising the artist to stick to caricature. But he hailed Cubism for its extreme radicalism.

Any dramatic change in art might foreshadow a social revolution, by Fénéon's anarchist lights—never mind if the art was arcane and destined for museums. Fénéon generally despised museums. His life abounded in apparent contradictions. He was the chief clerk of France's Ministry of War when, in 1894, he was arrested on suspicion of conspiring with a cohort of terrorists and stood trial with twenty-nine others. Bomb-making materials had been discovered at his office. His defense turned less on evidence than on a stream of witticisms that enchanted the Parisian public. Accused of having "surrounded" himself with two notorious characters, he objected mildly that it takes at least three people to surround anyone. In effect, he won an acquittal on grounds of being exasperating. For a time, he edited the avant-garde journal *La Revue Blanche*. Though not rich, he shrewdly bought and sold art, impervious to imputations of commercialism even as he joined the Communist Party. Little that might pose a problem to others troubled Fénéon. He died in 1944, possessed of an immense collection, much of which was sold off three years later, after the death of his widow.

Fénéon's most startling departure was to write, as a daily feature in a Parisian newspaper, in 1906, more than a thousand unsigned, usually salacious items. Titled "Nouvelles en Trois Lignes," these were diamond-cut in style, featherweight in tone, and exquisitely cruel. In one, he wrote, "Scheid, of Dunkirk, fired three times at his wife. Since he missed every shot, he decided to aim at his mother-in-law and connected." In another: "Pauline Rivera, 20, repeatedly stabbed, with a hatpin, the face of the inconstant Luthier, a dishwasher of Chatou, who had underestimated her."

I've found the online Fénéon show a waterslide into the lore of a staggeringly clever man who epitomizes a heyday of audacities in pell-mell, modernizing Paris. He never wrote a book. He cut a practically invisible figure in public. But, once you've made his acquaintance, he may pester any thoughts you have of the era, like something that is glimpsed and then, when you look, isn't there. ♦

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VOLUME XCVI, NO. 13, May 18, 2020. THE NEW YORKER (ISSN 0028792X) is published weekly (except for four combined issues: February 17 & 24, June 8 & 15, July 6 & 13, and August 3 & 10) by Condé Nast, a division of Advance Magazine Publishers Inc. PRINCIPAL OFFICE: Condé Nast, 1 World Trade Center, New York, NY 10007. Eric Gillin, chief business officer; Piper Goodspeed, head of brand revenue strategy; James Guilfoyle, executive director of finance and business operations; Fabio B. Bertoni, general counsel. Condé Nast Global: Roger Lynch, chief executive officer; Wolfgang Blau, chief operating officer and president, international; Pamela Drucker Mann, global chief revenue officer and president, U.S. revenue; Anna Wintour, U.S. artistic director and global content advisor; Mike Goss, chief financial officer; Samantha Morgan, chief of staff. Periodicals postage paid at New York, NY, and at additional mailing offices. Canadian Goods and Services Tax Registration No. 123242885-RT0001.

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CARTOON CAPTION CONTEST

Each week, we provide a cartoon in need of a caption. You, the reader, submit a caption, we choose three finalists, and you vote for your favorite. Caption submissions for this week's cartoon, by Julia Suits, must be received by Sunday, May 17th. The finalists in the May 4th contest appear below. We will announce the winner, and the finalists in this week's contest, in the June 1st issue. Anyone age thirteen or older can enter or vote. To do so, and to read the complete rules, visit contest.newyorker.com.

THIS WEEK'S CONTEST

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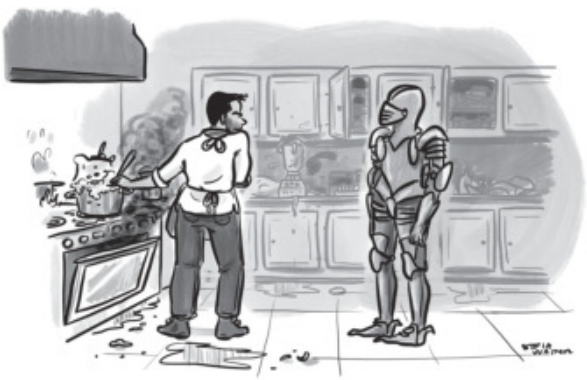
THE FINALISTS



“I heard dinner needed rescuing.”
Nina Preston, Denver, Colo.

“The round table is set.”
Scott Campbell, Winnie, Texas

“Fine—next time you slay the dragon and I'll cook.”
Ethan Spitalney, Boston, Mass.

THE WINNING CAPTION

“Of course—we wait forever, then two come at the same time.”
Elizabeth Novick, Brooklyn, N.Y.

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